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A RETROSPECT.

THE commencement of a new volume of THE SCHOOL WORLD affords a suitable opportunity for a brief survey of the performances of the past twelve months, in the light of the promises made in the first number, in which the primary objects of this magazine were stated to be the publication of information upon the principles and practice of teaching, and the provision of materials of real service to all who are engaged in educational work.

No useful purpose would be served by enumerating all the articles—serial and single—which represent the superstructure erected upon the plan laid down twelve months ago. The index issued with the December number furnishes the best of evidence as to what has been accomplished; and readers unfamiliar with these pages are invited to examine the long lists of articles and authors there referred to. Only a few of the subjects of last year's contributions need here be mentioned; they are, the teaching of algebra, the position and teaching of French and German, systems of commercial education at home and abroad, chapters in school hygiene, physical observations of boys and girls in schools, experiments and apparatus for teaching elementary general science, teachers' notes on English history and articles on important periods, current geographical topics, English composition, literature, and analysis, methods of teaching reading, the teaching of geometry, schools of public men, drawing in secondary schools, the ideal assistant master, and school preparation for the Civil Service.

This selection, referring chiefly to the modern side, and taken almost at random, will serve to indicate that THE SCHOOL WORLD is not so much concerned with educational theory in the abstract as with matters which form part of the day's work of schoolmasters and schoolmistresses. Theories in education, like theories in the realm of science, are unsound if they cannot stand the test of experience; and any good teacher may competently criticise pedagogic principles referring to subjects in which he gives instruction.

Definite statements by practical teachers as to methods followed by them with success are, therefore, always valuable, and there can be no science of education in the absence of such records. Differences of opinion are inevitable; but, as Francis Bacon said, "truth more easily comes out of error than out of confusion"; and the quickest way to find out the weak points in any scheme is to submit the matter to critics who have developed similar plans of their own.

This much by way of encouragement to teachers to relate their own experiences. Returning to the subject of the usefulness of THE SCHOOL WORLD, attention may be drawn to the test papers for the London Matriculation Examination next June, and for the Oxford Local Examinations in July, contained in another part of this number. Judging by the many applications for reprints of test papers for the Cambridge Examinations, published last year, this part of THE SCHOOL WORLD is of distinct value, and we hope soon to extend it to include some other important public examinations.

It would be ungracious to leave this retrospective glance without expressing thanks to the numerous members of the teaching profession who have sent us letters of congratulation, and have assured our position by their support. We are naturally gratified to learn that many teachers at home and abroad find the contents suggestive and helpful, but it is even more satisfactory to know that we have succeeded in producing a magazine in which teachers engaged in schools having pupils of widely different grades in the social scale are interested. We recognise in this a sign of co-ordination, and of mutual sympathy in educational effort, well worth bearing in mind by educationists formulating a scheme of secondary education.

PIONEERS IN EDUCATION.

By FOSTER WATSON, M.A.

Professor of the Theory and Practice of Education in the University College of Wales, Aberystwyth.

I.—The Practical Aspect of the Educational Works of Richard Mulcaster.

TAKE him all in all, Richard Mulcaster is the greatest of our Tudor writers on education. Others excel him in particular directions, or from especial points of view. Sir Thomas Elyot holds priority in his recognition of the value of drawing as mental training; Christopher Ocland as the promoter of patriotism in schools; Sir Humphry Gilbert as the protagonist of aristocratic encyclopædic education; Edward Coote as the writer of a book for the education of the poorest people; Roger Ascham's "Schoolmaster" is *par excellence* the classical work on the teaching of the classics. No one can doubt the superior attractiveness of the last-named over Richard Mulcaster in his style of writing. He is naive, quaint, natural, full of his subject, spontaneous, and for the most part convincing. But I am of opinion that, for originality of treatment, for comprehensiveness of educational views and for general pedagogical significance, Roger Ascham is himself surpassed by two writers of the Tudor age, John Louis Vivès and Richard Mulcaster.

John Louis Vivès wrote in Latin, but it is worth noting that from 1523 to 1528 he lived in England, lectured in Oxford, and was private tutor, or at least director of studies to the young Princess Mary, daughter of Catharine of Aragon, whose Spanish origin probably explains the presence of Vivès, himself a Spaniard, in England. He wrote amongst other books the "De tradendis disciplinis," and the "Institutio feminæ Christianæ." The former is a work of real educational importance, of which I believe there is no translation or adequate account in the English language. Vivès would be well worth a special article in which it might be shown that in the principles of education he has a suggestiveness of signal value. But as I am only associating one name with the Elizabethan era of education, I take the name of Richard Mulcaster rather than that of John Louis Vivès, because, as far as I can judge, Mulcaster borrows petty loans, or even larger amounts from Vivès, and gives them to his English reader—principal and interest, besides adding quite outstanding contributions of an especial helpfulness to English educational thought of his own.

To speak of Mulcaster as a great educationist almost seems to demand an apology, or at least a justification, for his position as such is hardly acknowledged even by those who write on educational literature. Hallam, for instance, in his "Literature of Europe in the 15th, 16th and 17th Centuries," does not, I believe, mention him, and M. Jacques Parmentier, who devotes an excellent chapter to Mulcaster in his "Histoire de l'Education en Angleterre," points out that Professor Saintsbury was able to write a volume on Elizabethan literature without so much as naming Richard Mulcaster. M. Parmentier might have added that Professor Saintsbury had repaired this omission by writing in vol. iii. of "Social England" an account of educational literature in which Mulcaster is at any rate named. There is, however, little more said of him than that he was "the chief follower of Ascham, in the strictly pedagogic vein." If by "follower" Professor Saintsbury means that Mulcaster wrote his book later in time than Ascham, we have the expression of an opinion which would be an interesting subject for inquiry as a piece of chronological investigation;[1] but if by "follower" Professor Saintsbury means disciple of Ascham, it would be interesting to have the grounds on which this opinion is based. I recognise that on one occasion Mulcaster says in his "Positions" (p. 102, Quick's reprint): "This exercise (of archery) do I like best generally of any round stirring without the doors, upon the causes before alleged, which if I did not, that worthy man our late and learned countryman, Master Ascham, would be half angry with me, though he were of a mild disposition, who both for training the archer to his bow and the scholar to his book hath showed himself a cunning archer and a skilful master." By the way, it is curious to note how nowadays the archer's bow has ceased to be an instrument of physical education. Both Mulcaster's chapter on shooting and Ascham's treatise, the "Toxophilus," are worth the consideration of educationists.

In writing about Mulcaster, therefore, I shall especially refer to questions which he raises, which do not find a counterpart in Ascham, and in which he does not, in the ordinary sense of that term, follow him, seeing that Ascham has not dealt with them, and, as far as I know, has not even indicated what his opinions would be. A much more likely place to look into for analogies would be, as I have suggested, the "De tradendis disciplinis" of J. L. Vivès. Another reason for taking up these characteristic "views" of Mulcaster is that they are so essentially practical that they are of the directest interest in to-day's educational problems.

The three "Positions," to borrow Mulcaster's term, that I shall emphasize are:—

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[1] Ascham died in 1568, and, as is well known, his "Schoolmaster" is left in an unfinished state. It was published in 1570. Mulcaster was headmaster of Merchant Taylors' School from 1561-1580. His "Positions" was printed in 1581; but since his other considerable work, "The Elementarie," was printed in 1582, it is possible that the "Positions" was written earlier. So that it is not quite certain, apparently, that Mulcaster was a follower of Ascham, chronologically. But that is a small point. A more important consideration is the fact that Mulcaster as headmaster of Merchant Taylors' School from 1561 onwards was a man of practical experience in teaching in a very important school, and hardly likely, therefore, to "follow" the guidance of an educationist who is suggesting the methods of a private tutor. How improbable this is will be seen if the reader will consult Mulcaster himself in his "Positions" (Quick's reprint), chapter xxxix. (p. 183 *et seq.*), where he emphatically developes the reasons why public education is better than private, and in the previous chapter, even for girls, declares with a seeming reluctance that he can say little as to whether their education should be public or private, because "there is no public provision." Accordingly, Mulcaster is a comprehensive writer on school education, as to which Ascham only incidentally refers.

I. The importance of the elementary school.

II. The necessity for the training of schoolmasters.

III. That young maidens are to be set to learning.

I.—As to the Importance of the Elementary School.

In chapter xxxvi. of the "Positions," Mulcaster states that those who are to have the benefit of the "trainer" or teacher are children of both sorts, male and female, young boys and young maidens. He adds: "I admit here, generally, *without difference of sex*." It is only right to say, however, that Mulcaster believes that there must come a "choice of wits" to go on to higher learning in such schools as the grammar schools. "Yet," he deliberately suggests, "by the way for writing and reading so they rested there; what if *everyone* had them for religion sake and their necessary affairs?" He thus contemplates, in a hypothetical fashion, it is true, universal education, up to a certain point. It may be pointed out, however, that he does not propose that it should be compulsory. His reason for not admitting all to school is that there are not "livings"[1] enough for the learned. "For the rooms which are to be supplied by learning being within number, if they that are to supply them grow on beyond number, how can it be but too great a burden for any state to bear?" This fully explains Mulcaster's objection to going too far with the production of scholars.

But when Mulcaster comes to treat of the teachers, he is in touch with the best modern thought. He says that he will deal in his book "with that *propriety in the common master*, which concerneth teaching which is either elementary . . . or grammatical . . . or academical." Of these three kinds of teachers, as we should say, elementary, secondary and university, he chooses the elementary teacher for special mention. In the "Positions," he says: "The first grounding [of the child] should be handled by the best, and his reward should be greatest, because both his pains and his judgment should be with the greatest." The material of instruction is, says Mulcaster, "very small in show, though it is great in process." But what is more is that a good, scholarly, well-paid elementary teacher is of high service "for the manner of handling the child's wit, *to hearten him for afterward*. Which," adds this educationist, "is of great moment." To induce "very able men" to enter elementary teaching the payment should be good. Says Mulcaster: "If I were to strike the stroke as I am but to give counsel, the first pains truly taken should in good truth be most liberally remembered and less allowed still upward as the pains diminish and the ease increaseth." To appreciate the insight of Mulcaster, it is well to bear constantly in mind that he was the Headmaster of Merchant Taylors' School, a stronghold of grammar as classical instruction.

Not less significant in his views with regard to the subjects of instruction and the manner of their teaching in the elementary school. The hand is to be trained in writing, the eye in drawing, and the ear in music. "Music is the natural sweetener of our sour life, in any man's judgment that is not too sour." It is to be employed so as to help to an appreciation of the "beauty of concord and blot of dissension" even in the body politic. Reading is to be taught so as to receive what the past has delivered to us. Writing gives us ease in daily use. These subjects, reading, writing, drawing, singing, playing, are the "first humanities," and there is the key-note of Mulcaster's discourse. The elementary school is to train for the "first humanities." For that purpose, the English language is to be taught, and used *con amore*. "I favour Italy, but England more. I honour the Latin, but I worship the English. . . . I do not think that any language, be it whatsoever, is better able to utter all arguments, either with more pith or greater plainness, than our English tongue . . . not any whit behind either the subtle Greek for crouching close on the stately Latin for spreading fair." Put into modern terms, Mulcaster's plea is that even in the elementary schools there should be liberal education, as far as it goes, with disinterested aims.

II. The Necessity for the Training of Schoolmasters.

At last in England we have got the prospect of the registration of teachers, founded as it must be on training. At present we are in the very beginning of the training of teachers in secondary schools. Yet if we wish to put the case for training, we can hardly find better words than those of Mulcaster: "He that will not allow of a careful provision for a seminary of masters is most unworthy either to have had a good master himself or hereafter to have a good one for his. Why should not teachers be well provided for to continue their whole life in the school as divines, lawyers, physicians, do in their several professions? Thereby judgment, cunning, and discretion will grow in them, and masters would prove old men, and such as Xenophon setteth over children in the schooling of Cyrus. . . . I conclude, therefore, that this trade requireth a particular college for these four causes:

"(1) For the subject being the means to make or mar the whole fry of our State.

"(2) For the number, whether of them that are to learn, or of them that are to teach.

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[1] The destruction in Henry VIII. and Edward VI.'s reigns of the various colleges attached to the cathedrals and large churches, and of the chantries, must have made a considerable void in the "livings" of the learned, and perhaps to some extent accounts for Mulcaster's demand that the "overflowing multitude of scholars" must be restrained, and that parents must "yield over" their desires to have their children learned "to the disposition of their country." "For while the Church was an harbour for all men to ride in, which knew any letter, there needed no restraint; the livings then were infinite and capable of that number; the more drew that way and found relief that way, the better for that state which encroached still on, and by clasping all persons would have grasped all livings." How opposed this is to the old educational supposition that general teaching began with the Edwardian grammar schools! See A. F. Leach's "English Schools at the Reformation," 1546-8.

"(3) For the necessity of the profession, which may not be spared.

"(4) For the matter of their study, which is comparable to the greater professions, for language, for judgment, for skill how to train, for variety in all points of learning, wherein the framing of the mind and the exercising of the body craveth exquisite consideration, beside the staidness of the person."

III. That Young Maidens are to be Set to Learning.

Mulcaster devotes Chapter xxxviii. to the teaching of girls. Historically the most interesting statement is made that "it is the manner and custom of my country" that girls should be taught. He asserts that this is a statement that any Englishman would be loth to deny. He can name four reasons for the teaching of girls "whereof any one, much more all, may persuade any their most adversary, much more me, which are for them, tooth and nail."

The four reasons are: (1) That it is the English custom; (2) It is our duty not to "leave them lame"; (3) Their *towardness* which God would not have given them but for fulfilment; (4) The excellent effects which have come to them from education. What can be said more? "Our country doth allow it, our duty doth enforce it, their aptness calls for it, their excellency commands it." He requires for them reading, writing, music. He desires them to enter the professions. He would have them learn philosophy and languages, and particularly wishes them to learn to draw. The teacher may be "either of their own sex or ours." Whether they should go to a school where there are other girls, or be taught at home, he leaves to "their parents' circumspection."[1]

I have not enumerated the multitudinous "Positions" taken up by Mulcaster. I have only shown those characteristic points where he deals with problems of vital interest to us. But I trust that in doing this I have, at any rate, shown that Mulcaster deserves careful study.

One distinct deduction I should like to leave with the reader. Educational writers are often charged with being "mere theorists." Now, the experience of our own times has shown that Mulcaster's theories on the three points with which I have dealt were *right*, and we all believe now that they are eminently practicable. Would it not have been well if in the past people had read Mulcaster, studied him, taken his suggestions and tested them critically, referred them to experience, applied them to practice, sifted them and modified them where they were inadequate, instead of letting them drift through three centuries as unconsidered trifles, and to-day, despite their importance, relegated to a casual remark even in an account of the educational literature of the very age in which he lived? Is it not indeed high time that the theory and history of education should assert its academic position as a matter of *practical* concern?

References.

The Rev. R. H. Quick:

(1) Reprint of the "Positions" (1581). 1887. (Longmans.)

[A sympathetic piece of editing and generous outward form to Mulcaster's chief work. A life of Mulcaster is given in an Appendix.]

(2) Essay on Mulcaster in "Essays on Educational Reformers." By R. H. Quick. (Longmans.)

M. Jacques Parmentier:

Chapter IV. on Mulcaster, in his "Histoire de l'éducation en Angleterre."

Dr. Theodor Klahr:

"Leben und Werke, Richard Mulcaster's."

[A learned and comprehensive essay on Mulcaster, the result of much study both of Mulcaster and of books on education and other books of the time.]

THE IDEAL HEADMASTER.

By Rev. Canon Fowler, M.A.

Headmaster of Lincoln School.

In a preceding article I have dealt with the Ideal Assistant-master, and it may seem to some that the qualifications for a schoolmaster, whether as head or assistant, must be very much the same, and that if a man is a good assistant-master he must necessarily make a good headmaster. Such, at any rate, is the way in which bodies of governors seem to reason when they make an appointment: such and such a man has taken a high degree, has been a successful teacher in his form, has been able to keep discipline, and so on, therefore let us put him into the vacant post. Accordingly, without taking any other points into consideration, they do so, and then are too often surprised to find that he is not more of a success, even if he is not an absolute failure. It is a well-known fact, so much so that it has almost passed into a proverb, that a man may be a good lieutenant, but a bad general, and it is the same in every walk of life; the hard-working, popular curate often makes a most indifferent rector; the trusted and capable head-nurse or assistant-matron in a large hospital may turn out a thoroughly inefficient head; the confidential managing clerk, who seemed the heart and soul of the business, may fail utterly when he has risen to a partnership and succeeded to a high place in the firm; and so it is only to be expected that the capable assistant-master will at times be found a failure when he takes the reins. And the reason is not far to seek. To be a successful head of any sort or description a man or woman must possess some spark of that subtle power which enables them, in however limited a degree, to be rulers of men. If it is true of the good assistant-master that he is born, not made, it is ten thousand times more true of the successful headmaster; our greatest headmasters have been pre-eminently leaders of men, and would have reached the highest positions in any sphere of life.

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[1] I have noticed above that Mulcast that there is no "public provision" of girls' schools. I have come across a passage which I have never seen quoted in "The Catechism" of Thomas Becon (in the reign of Edward VI.) where the following suggestion is made: "If it be thought convenient, as it is most convenient, that schools should be erected and set up for the right education and bringing up of the youth of the male kind, why should it not be also thought convenient that schools be built for the godly institution and virtuous bringing up of the youth of the female kind? Is not the woman the creation of God as well as the man? and as dear unto God as the man? . . . Can the mothers bring up their children virtuously when they themselves be void of all virtue? . . . Can that woman govern her house godly which knoweth not one point of godliness? . . . Verily, in my judgment, they do no less deserve well of the Christian commonweal that found and establish schools with honest stipends for the education and bringing up of the women-children in godliness and virtue than they which erect and set up schools for the institution of the men-children in good letters and godly manners." This suggestion of Becon, it must be remembered, is at the time of the so-called "Royal Foundations" of the grammar schools for boys. It sounds very much as if the girls' high schools were the belated and unconscious practical response to this vigorous appeal in the middle of the sixteenth century.

It is true that a headmaster must be a scholar, and to a certain extent a good teacher, but this is comparatively a secondary consideration in a large public school; he must further be a disciplinarian, but his views on this point will have to embrace a wider horizon than when he was an assistant. But in addition to these qualifications, which are common to all, he must be endowed with tact in no ordinary degree, with keen judgment, with a large capacity for sympathy deeply felt, but not too openly expressed on all occasions, with readiness to accept responsibilities, and above all with a cheerful spirit which will enable him to bear all the thousand-and-one worries which are the daily lot of the conscientious headmaster.

In my last article I said that "the ideal assistant-master of the large public school, or of the grammar school, or of the preparatory school, will be very different." This is still more true of the ideal headmaster, and it will be evident to all if the factors with which a headmaster has to deal are taken into consideration. These, we may say, are as follows:—Governors, assistant-masters, boys, parents, and in most cases, we may add, servants and retainers, and, especially in large town schools, the general mass of his fellow-citizens. Now with the headmaster of the large public school the parents are practically a *quantité négligeable*. I say this with all deliberation, not with the idea that the headmaster *does* neglect them, but that he can if he likes, which makes all the difference. An unreasonably fidgety parent soon receives a gentle hint in such a school that there are plenty of others waiting to take his son's place. In such a school, too, we may place the governors under the same category; as long as there is plenty of money (and there nearly always is), and things are going smoothly, the headmaster is as much an autocrat with his governors as with his parents. In the large town day-school, however, and in the grammar school, the parents are a very important factor indeed, and a man's success depends very largely upon the tact and patience with which he deals with them. The governors, moreover, especially in the smaller country schools, being often men of not much education, are anxious to make up for the deficiency by everlastingly airing their ideas on the subject, and endeavouring to teach the headmaster his business; and as they hold the purse-strings, and can largely help or hamper the school, they must be treated with unfailing patience. Lastly, the preparatory school headmaster, though neither troubled nor helped by governors, has, except in very few cases, to be ever on the look-out so as not to give offence to his parents, whose boys, though they may have the digestion of an ostrich and a preternatural power to resist cold, are always, on their first departure from home, described to their master as "delicate and requiring particular attention." It is quite obvious, then, that the qualifications of these several kinds of headmasters must be very different, although, of course, they will have many, and these most important, points in common.

Now it may appear presumptuous in me to say anything regarding the ideal headmaster of one of our great public schools, but as I have had the good fortune, as boy and assistant-master, to be under two heads who were admittedly among the best of their generation, I may perhaps speak with some little authority. Certainly in my headmaster as a boy at school I found my ideal, and in the light of succeeding experience I have never changed my opinion—apparently stern and unbending, yet always ready with a smile or kind word to those he knew to be doing their duty, unflinchingly just, a terror to evil-doers, yet keeping things straight without the least apparent effort, feared and yet loved, it was no wonder that we looked up to him as we did; and yet there has always appeared to me to have been one flaw in his system, and that was that we were left too much alone to govern ourselves. I was in his house for upwards of five years, and for three of these in the Sixth Form, and I only remember seeing him in the house on three or four occasions, except at prayers. On one of these he came to my study and scolded me because there was a disturbance in the house and I had not stopped it; but he did not attempt to stop it himself, and walked back to his own part of the house. As it happened, the disturbance was an organised one on a traditional night, and was commonly supposed to be allowed by the authorities. Not long ago I met him, and in the course of conversation reminded him of the fact, and said I thought he might have stopped it himself. "Oh! that was your business," was the characteristic reply, and this well represents the position of the Sixth Form boy in many of our best schools. Now it is quite plain that if the Sixth Form boys in any house are a good lot, if, moreover, they are a strong lot, then no system can work better; if, however, they are weak or lax themselves, it would be impossible to find a better illustration of the saying, *Corruptio optimi pessima*.

Towards the end of my time we happened in our house to have a very strong sixth, nearly all being in the School or House Eleven at cricket, or having their "Caps" at football; most, I think, have done well since, one having been a member of the late Government. Under their rule vice and evil were kept down with a high hand. But in a neighbouring house, in which I happened to have a friend who lived near me at home, it was just the reverse. But this is going too far from our subject; the ideal Sixth Form boy might well have a separate article to himself. It is certainly very hard for a Head to hit the happy medium between a fidgetiness that worries and does no good and a policy of non-interference that seems to savour of indifference. A good headmaster should never be fussy, but, on the other hand, he should not be casual and careless and given to overlooking matters which he ought to see to; boys prefer a sanguine temperament to a cold and phlegmatic one; they have a sort of intuitive knowledge that the position is trying to the nerves, and never resent a sudden outburst of temper if it is justly caused and occurs very seldom. There is probably no scene in Tom Hughes' account of Dr. Arnold which is more characteristic than that in which he describes his sudden onslaught on the boy who made the celebrated translation of "*Triste lupus.*" It is all a question of the nervous system, and I do not believe that there is a greater strain to be found than that of a headmaster's work and responsibility, extending as it does over so large a period of life; otherwise, how is it that so many seem to succumb to it, some for a time, some, alas! altogether? The ideal headmaster should be proof against worrying, but I am sure that such an ideal never existed.

The question of assistant-masters is one that must always occupy to a great extent the mind of the Head: how is he to deal with them? In a large public school there are often great difficulties: there are nearly always some older masters, usually with vested interests, such as a house, whose removal would be better for the school; yet it is very hard for the Head to turn them out. They have never cared to look out for other places, as they have had a good salary and no responsibility, and so they have become fixtures, and often incompetent fixtures. When it becomes imperative to remove one of these, the ideal headmaster will, at all events, do it with every consideration, and so avoid the scenes and unpleasantness and newspaper correspondence (of which we see far too much) that do so much harm to the welfare of many of our schools. With regard to the general treatment of assistant-masters by the headmaster, it ought to be simply that of one gentleman dealing with another; there should be absolute fairness, without any suspicion of favouritism; anything like perpetual fault-finding, or *espionage*, or the least appearance of setting one master against another, should be carefully avoided. It is for this reason that the system of making one master examine the form of another and report on it, which is (or a short while ago was) in vogue in one of our larger public schools, is so much to be deprecated.

The question of reform is one that is often brought forward, but this we can only just touch upon; it is well known that it is needed and in what direction it is needed, but conservative principles are nowhere more binding than in the great public school. As in the days of Dr. Arnold, "every trumpery little custom and habit which had obtained in the school" is looked upon as though it "were a law of the Medes and Persians," and the "infringement or variation of it" is regarded as "an act of sacrilege." Many of these traditions are quite harmless, and it would be the greatest pity to abolish them, even regarding them as relics of antiquity; but there are some that require excision with a high hand, and any headmaster who could without disaster carry out such reforms would be indeed an ideal.

Had I space I should much like to say a few words on the question of punishment, especially corporal punishment. The question has been brought home to me in times past very strongly, as I had the charge of a school entrusted to me which had practically been flogged empty by a headmaster, excellent and popular as a man, but with no sense of proportion in this respect. I always admired the plan of the headmaster who reduced flogging to a minimum, but when he did use the birch charged ten shillings in the bill for the twigs, and presumably for his trouble, but this, if it is not a tradition only, is obviously in most schools impossible. At any rate, the ideal headmaster will take the greatest pains to be absolutely just in his punishments. In this, however, lies one of his great difficulties. It is easy enough as far as he himself is concerned, but how is he to deal with the case in which a boy and an assistant-master have come into collision, and he sees plainly that, to say the least of it, there is much to be said for the boy? Is the master to be supported at all costs?

I do not venture to answer the question. All I would say is that it is always a most delicate thing to even seem to take any part against an assistant-master, and that it is usually possible, with the necessary tact, to establish a *modus vivendi*. I feel very strongly on this point, as I have seen excellent assistant-masters becoming disheartened, and boys at a critical age temporarily, at all events, deteriorating (because they feel, as they express it, that it is of no use trying), and all arising from a mutual misunderstanding of each other's characters and motives. How much would be gained if people would only learn that it is an absolute gain in every way to acknowledge that they have made mistakes. Everyone must do so at times—the greatest statesman and the greatest general, as well as the greatest headmasters. They must, of course, be few and far between; but, granting this, the acknowledgment immediately produces a revulsion of feeling. We have had a very strong proof of this lately, and it is true in every walk of life, from the highest to the lowest, and nowhere more so than in the community of a great school.

As has been said before, the requirements for a headmaster's position in a town school consisting largely of day boys are in many respects very different from those of the headmaster of a large public school consisting only of boarders. The parents, to put the matter bluntly, are on the spot and can employ combined action, and are therefore more considered. A headmaster cannot take their suggestions with a high hand, if they are reasonable ones, and if he is worth anything he will try and meet their views, so far, of course, as is compatible with the interests of the school. By the use of a very little tact and of a conciliatory manner, it is very easy to make the parents of our boys our warmest friends and supporters, and the result is well worth the effort. It does not always do to call a spade a spade. It does not do to say, as a headmaster I once knew said to an anxious mother who complained that her son was not getting on as he should, "Your boy not getting on, I shouldn't think so; why, your boy is a born fool!" I need hardly add that this headmaster was a failure, and that when afterwards he was through interest appointed to the charge of a more important school, he was a worse failure, and in consequence was soon rewarded with a considerable pension for life. But this is the way of the world. I have known several failures who have in this way succeeded admirably.

We have only space to touch upon one more point, and that is the most important of all, viz., "How is a headmaster to deal with a large mass of boys? How is he to bring his personal influence to bear upon them? It is impossible for him, where the numbers are very large, to know much of them individually beyond the members of his house and of the Sixth Form. Upon these, of course, he can act directly, but in dealing with the mass he will always find the school chapel his most powerful sphere of influence. If his sermons are such as they should be, every boy will feel that he knows him personally, and will take his words as if spoken to himself individually. I am afraid I am too conservative, but I feel very strongly that in all schools where there is a chapel the headmaster should be in orders, and that a chaplain of a school, who is a chaplain and nothing more, is a mistake and an anomaly.

Boys like to be taught religion by their headmaster. They are careless enough, but very responsive if taken aright. They are easily affected by extraneous influences. When I was a boy the service that always impressed me most was a short address from the headmaster on the Saturday afternoon before Holy Communion, just after football. We were allowed to come in just as we were, covered with the grime and dust of a hard game played under the roughest of rules, and the sudden change from the turmoil and noise to the dimly lit and quiet chapel seemed to give a double force to the words of a preacher always powerful and always in deadly earnest. And all earnestness is infectious. Enthusiasm begets enthusiasm, and in this earnestness and enthusiasm lies one of the great secrets of the power of the ideal headmaster. Some of the feelings raised in us when all was fresh and young may have gone, never to return, but their memory is not forgotten. It is a solemn but true fact which all headmasters should lay to heart that their words and their actions carry with them an influence that may stretch on for generations, and that over and over again it has been to their schools and their headmasters, rather than to their homes and their parents, that many of our greatest men have owed the formation of their character, and the chief part of their success and usefulness in life.

HOME WORK IN GIRLS' DAY SCHOOLS.

By SARA A. BURSTALL, B.A.

Headmistress of Manchester High School.

IN this simple phrase is included one of the greatest practical difficulties with which the authorities of girls' schools have to deal—a problem which at times appears impossible of solution, except by the sacrifice of either one good thing or another.

So far as we know, the matter does not press so much in dealing with boys, and this for three reasons. The first is health. Whatever may be the truth as to the comparative physical power of men and women, there is no doubt that girls of school age are more delicate than boys from twelve to eighteen, and need a fair amount of rest and open-air exercise, if they are to grow up fit mothers of a healthy race. Second comes the fact that boys rebel against work, and girls do not; thus, though of course some boys overwork, far more follow the example of Tom Brown and his friends, not to mention Stalky & Co., and do as little as they can. This kind of thing is rare among girls. Women do not mind drudgery, especially if it is mechanical: they are, on the whole, more conscientious, and, if our brother colleagues will allow us to say so, women teachers generally look after the individual, and see that the set work is done, more thoroughly and conscientiously than men. The third reason is, as far as experience goes, the most fruitful source of difficulties about home work in girls' schools—the multiplicity of subjects a girl is expected to study. Besides the ordinary curriculum of a liberal education, the average girl has to learn sewing and music (*i.e.*, piano), and probably drawing, and often there are, in addition, claims on her time in the home—claims which are not made on her brother.

It is obvious that, if the school morning is spent in ordinary lessons and the afternoons in drawing, sewing, singing, gymnastics, etc., etc. (the usual high-school arrangement), and if a pupil has besides some two hours or so of preparation and an hour's practising to do, she has but little time left in her day for rest, recreation, or exercise. Yet this is the course too often demanded by parents anxious for their girls to learn as much as possible in the too brief years of school life, and allowed by teachers who have never watched an individual pupil conscientiously going through such a day of unremitting labour. It is certainly true that, if a girl gives all her time for forty weeks in the year, from the age of six to that of nineteen, to her education in a good school, she can learn all these subjects, each in its turn, without over-pressure; but there are even now few girls to whom such a course is possible.

In the boarding-houses attached to our high schools it is found by practical experience that everything, even the practising, can be fitted into the day, and yet time can be found for exercise, recreation and long hours of sleep. But in these houses meals are planned for the convenience of the pupils; no distractions of entertaining visitors, nursing the baby, or "going into town with my mother" break the regular routine. For day girls the problem is quite different, especially for those who can only come for a few years and who naturally try to learn everything in that period.

The only way out of the difficulty is for the headmistress, on the one hand, to cut down the amount of home work set by the teachers, and, on the other, to persuade the parents that it is utterly unwise for a girl to learn many subjects at one time. The latter is the more important point, and the crux of the whole question. If it is settled, the danger of teachers demanding too much home work is all but obviated. With few subjects, and therefore frequent lessons in each, less home work is necessary. If the class has a Latin lesson every day, the pupils will make progress with very little home work; if arithmetic comes four times a week, one home work paper of, say, forty-five minutes is all that is required. This system means, of course, careful organisation, alternative subjects, and a study of each girl's time-table, involving, perhaps, letters home and interviews with parents; but the result is worth the trouble. No tinkering with the details of so many minutes for this lesson and so much home work per night is any use while the causes that make for over-pressure are still allowed to act. Above all, when working on the usual school plan, afternoon lessons must be kept at a minimum. If a girl is doing much in drawing, sewing, music and similar subjects, her morning work must be cut down by the omission of part of the ordinary curriculum, and she must prepare some home lessons in school. To manage all this wisely, with due regard to general intellectual development and individual needs, requires tact, discretion and judgment on the part of the school authorities; but for what else are they there? The circumstances of particular girls vary considerably; some travel long distances to school; some are delicate; some have special home duties; some can best prepare their lessons at school in the afternoon; some need exercise in the afternoon, and can work more conveniently from, say, 4 to 6.30 at home. All these possibilities must be inquired into and considered, and the afternoon or extra subjects arranged accordingly. The form teacher can do some of this planning; but each case should come, at least *pro formâ*, under the notice of the headmistress. An easy method of so doing is to have a home time-table, stating afternoon subject taken and lessons for each evening, signed by parent, form teacher, and head.[1] But unless the subjects taken are comparatively few, this form will not be worth the paper it is printed on; it will be a form, and nothing more.

MANCHESTER HIGH SCHOOL FOR GIRLS.

Form......

HOME-WORK TIME TABLE.

Name.......

	Monday	Tuesday.	Wednesday.	Thursday.	Friday
Preparation time in Morning school.					
Afternoon lessons 3.30					
„ 4.15					
Home work					

The Head Mistress should be informed if th time here stated be habitually exceeded. She considers that no school girl should ever work afte 9 p.m., and she earnestly begs the co-operation o the parent in enforcing such a rule.

Total Home Work:

...... *Hours per Week.*

Signature of Parent or Guardian ....

„ „ *Form Mistress* ....

„ „ *Head Mistress* ....

Speaking generally, boarders and girls living within walking distance of school can do most work; girls taking higher examinations can do little in the way of drawing and music in the last year of preparation; junior external examinations are things of iniquity and should be absolutely forbidden, at least for girls; nursery meal hours and midday dinner fit in best with home lessons and early sleep, and, for this is all-important, no school girl should ever work after 9 p.m., whatever happens; she had better leave her home work undone.

So far we have considered the problem as concerning the parent and the home, curriculum and individual circumstances. There is much, however, that is of a more purely technical and pedagogic character. Take, *e.g.*, the question as to what age should girls begin to do home work. The answer is probably about twelve. Below that age they should come back for a short afternoon session to do some preparation under the supervision of the teacher, or have regular afternoon lessons in lighter subjects like writing, handwork, &c., and do no home lessons except occasionally learning poetry or making pictures as illustrations. Again, a teacher should always remember that the better the teaching the less the amount of home work required, except with senior classes. If the class is really thinking and working with the teacher during a lesson, the girls do not need to do much work outside. Many women teachers have a superstition about home work; unless they set it and correct it elaborately, they think they are not doing their duty. But this is because their aim is wrong; they are seeking to instruct, not educate, to get information into their pupils' memories, not to make their girls think. Often, too, the method is wrong, as when science is taught from a book, or French by writing exercises. As to the time given, about two hours a night, ten to twelve hours a week, is the maximum for the middle school (thirds and fourths), from twelve to fifteen years of age; this amount errs rather by excess than defect.

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[1] See *infra*.

Senior students need, of course, to be trained into working alone; they must do Latin prose and riders, and read history as home work. But they are presumably specialising to some extent, and have not so many subjects. Even with them it is often possible to have very profitable lessons for which no home work is set. Taking five lessons as the normal number per day, there ought to be home work set for but three. Once a week, or even once a fortnight, is often enough for an algebra paper, a history essay, or a set of chemistry problems. The maximum time spent, outside the five mornings of a school working week, should be fifteen hours, which makes thirty-five hours altogether, a long enough working week for any growing girl. This maximum must be real, and be not merely the normal time for home work; on most days the amount should be less than could be done in the allotted time, so as to allow for slow and average girls. We come back again to the fundamental principle of trying not to do too much. Fix the time, and make the amount of work done fit in with it; that is the only way to prevent over-pressure. This may mean taking three years to prepare for an external examination instead of one or two, but surely the game is worth the candle!

The best way of testing thoroughness of work is by frequent written examinations, varying in length from ten minutes to one hour. These deserve careful correction and marking, and can sometimes be revised in class. In any case they should be criticised, and the longer ones corrected afterwards by the pupil. If little regular written home work is set the teacher will have time for this. Speaking generally, women teachers set and correct far too much written work, and so fatigue themselves as well as their pupils. They would give better lessons and do more good if they spent more time on preparation and amusement.

We can ensure that the teachers of different subjects set a fair amount by agreeing beforehand as to the maximum time, and dividing it among the various subjects: this must be done by consultation between the class mistress and the specialists before the pupils draw up their home time-tables for signature. Zealous teachers tend to set more than can be done in the allotted time: this is one reason why the nine o'clock rule is so important as then the work gets left, and the teacher finds out her error. The pupils must be trained to have a conscience about keeping to the time set, and they should be in such happy relations with their teacher that they will come next day and state that the work took too long, if such an accident happen. A teacher of discrimination can generally judge whether in a particular case such a statement is trustworthy: besides, girls do not as a rule malinger or shirk work; they tend too much to the opposite fault. The teacher, too, should have a conscience about setting home work, considering this as a necessary evil, and only requiring it when it really is wanted. Too often teachers feel obliged to set home work, and give it out, without thinking, at the end of the lesson, because it is supposed to happen, and not from any fixed purpose. They should always say to themselves, "Now, can we manage this week without home work?" (especially without written home work). Here again good text books are a great help, as avoiding notes and abstracts: in the reaction against older methods of teaching the proper use of the text book has been neglected, or, alas! parents are too often unwilling to pay for the many good educational books now issued, which are more costly just because they are better than the miserable compilations of the last generation. It is a good plan to spend one whole lesson occasionally in reading up a chapter, in a history book and so forth, with the class, to show them how to get up a subject.

Every craftsman has his own pet ways of getting over technical difficulties, and there are doubtless many other useful devices besides those mentioned here. What is above all needed is the determination among the women who are running the girls' day schools at present to have less home work done with equal efficiency. This means good skilled teaching. We cannot solve the problem by itself. The development of faculty according to psychological principles; sound methods; trained teachers; a stratified and graduated curriculum; abolition and simplification of examinations; inspection by experts; organisation not only of one school, but of the educational system; physical culture and a healthy way of living—all these are variables involved in our equation. When these are fixed the difficulties about home work will disappear—and not till then.

Home work should break new ground.—The best closing formula for a lesson would be, "Next time we shall be able to discuss . . . . See what you can make of it for yourselves." This is what we mean when we set home lessons to be heard at school, and it is therefore of immense importance that home lessons should *break new ground*, in ever so humble a way, and with careful regard to age, health, and status, and not be *merely* "exercises" on work done in school. The mental attitude which we should desire our teaching to produce in our pupils is expectancy. Everything that deadens this is bad teaching. If we can get our boys and girls to leave the class room wishing to know a little more, be sure the process of digestion will be healthy.—P. A. Barnett in "Common Sense in Education" (Longmans).

A TEACHER'S LIBRARY OF GEOGRAPHY.

By Hugh Robert Mill, D.Sc., F.R.S.E.
Librarian to the Royal Geographical Society.

It was with a light heart that I acceded to the Editors' wish to advise the readers of The School World how best to spend five guineas on geographical books, and cheerfully I postponed the trifling task to what I fondly believed to be a more convenient season. The season has not proved convenient, and the task looms portentously large, for the first rough list of books no teacher of geography should be without added up to £20 0s. 3d. Therefore a selection has to be made. If the reader would prefer to make it himself, he will find in my "Hints to Teachers and Students on the choice of Geographical Books for Reference and Reading" (Longmans, 1897, price 3s. 6d.) a still more ample list, worth hundreds of pounds at published prices, with notes designed to help him to discover what works would be most useful to him.

The main essentials for the teacher's library are trustworthy works of reference to which he can turn for facts and figures; but it is also very important to have at command a selection of books giving some insight into the methods and the human interest of the science. In geography the most interesting book is the daily newspaper, and an album of newspaper cuttings carefully selected and intelligently indexed will well repay the trouble of preparation. Much care is wanted in the selection of cuttings. Morning papers, as a rule, are more trustworthy than those published later in the day; the prospectuses of commercial companies may be ignored safely even when illustrated with maps, and the statistics or opinions given in political speeches, or in letters to the Editor signed by initials, trite proverbs or vague designations, may be regarded as particularly open to criticism. On the whole, *The Times* is the most trustworthy newspaper, and the difficulty of its high price may be overcome by purchasing the weekly edition, in which all the best articles are reprinted. It has the incidental advantage of being printed on good paper, so that, if carefully pasted in, the cuttings may always be read with comfort. Facts in physical geography, such as the changing of the monsoons, the rising of the Nile, landslips, earthquakes and floods, which have a personal interest to humanity, can be illustrated, explained and made real far better from the columns of a newspaper than from the pages of a text-book. The same is true of the commercial intelligence; the dates of arrival of steamers and sailing ships, their cargoes and the prices of commodities, are all occasionally of interest and often serve to give point to what might otherwise prove a dull lesson. I consider that one of the chief objects of a teacher's library is to provide him with information which shall throw living light on the brief, compressed statements of the class-book.

Geography demands for its study not only books but apparatus. The latter may be left outside the scope of this article; but the teacher must have a globe, even if he omits to purchase many books. It is better to get an old eighteen-inch globe than a new six-inch one, for the accuracy of the map is of less importance than a good size and nicely graduated circles. Maps cannot be left out of account.

Maps.

Every teacher must have a series of maps ranging through a great variety of scales, from the plan of his parish to the chart of the world. The smaller scale maps are provided for in the Atlas, but those on the larger scales require to be purchased separately. The minimum equipment in large-scale maps is:—

	s.	d.
(1) Sheet of the Ordnance Survey parish plan, on the scale of 1:2,500 or 25 inches to 1 mile, containing the school or the teacher's residence . . .	2	6
(2) Sheet of the Ordnance Survey county map on the scale of 1:10,560, or 6 inches to 1 mile, containing the surroundings of school and residence	2	6
(3) Sheet of the Ordnance Survey general map (with contour lines) on the scale of 1:63,360, or 1 inch to 1 mile, containing the country shown in the 6-inch sheet	1	0
(4) Sheet of Bartholomew's Reduced Ordnance Survey map on the scale of 1:126,720, or 2 miles to an inch (tinted between contours) including the same region	1	0
(5) Bartholomew's map of England, Scotland, or Ireland, on the scale of 1:633,600, or 10 miles to 1 inch ..	1	0

The maps of the Ordnance Survey are to be obtained from agents in all parts of the country, including many post-offices. A list of these agencies is given in a blue book entitled "Ordnance Survey Maps, 1897 [C—8481]," price 2d, to be obtained from Eyre and Spottiswoode, 32, Abingdon Street, London, S.W. Any bookseller may order the maps direct from the Ordnance Survey Office, Southampton; but stocks of the whole series of maps of England, Wales, Scotland and Ireland respectively are kept for sale by Stanford, 27, Cockspur Street, London, S.W. (for England and Wales); Menzies and Co., 12, Hanover Street, Edinburgh (for Scotland); and Hodges, Figgis, and Co., 104, Grafton Street (for Ireland). The other maps may be obtained from any bookseller. Foreign maps may be most readily and cheaply procured through the large foreign booksellers, such as Dulau and Co., 37, Soho Square, London, W.C., or Williams and Norgate, 14, Henrietta Street, London, W.C., and Castle Street, Edinburgh. Geikie's geological maps of England and Scotland (Ireland in preparation), published by Bartholomew, are marvellously good and cheap; but while very useful to a teacher of geography who has some knowledge of geology, they cannot be put down as absolutely indispensable.

With regard to atlases, the cheapest and best for reference at a moderate price is "The Citizen's Atlas," by Bartholomew, published by Newnes at

16s. In addition to such a reference atlas, I would strongly recommend the teacher to possess himself of Sydow-Wagner's "Methodische Schul Atlas," price 5s., published by Perthes, of Gotha, and also of the "Taschen Atlas," price 2s. 6d., by the same publishers. The former gives an admirable delineation of surface features in tints, and contains better maps of Central Europe than can be found in any British or American atlas, and the latter is a pocket atlas of exquisitely engraved maps; on a small scale, it is true, but so sharp and clear as to serve instead of a larger atlas for many purposes.

The maps mentioned above will cost 8s., the atlases, allowing 25 per cent. discount on the Citizens' Atlas, 19s. 6d., or together £1 7s. 6d. But, as it may very well be that the teacher already possesses a good atlas, or some of the books mentioned below, I shall enumerate five guineas' worth of books in two divisions, suggesting that, if it is desired to include maps and atlases in the total sum of £5 5s., the saving may be effected by discarding some of the books in the second division.

I. Books of Reference.

	s.	d.
The Times "Gazetteer of the World," edited by G. G. Chisholm. *The Times* Office, 1899 .. (*net*)	17	6
"The International Geography by Seventy Authors," edited by H. R. Mill. Newnes, 1899 .	15	0
G. G. CHISHOLM, "Handbook of Commercial Geography." Longmans (last edition) . (*net*)	10	0
J. S. KELTIE & I. P. A. RENWICK, "The Statesman's Yearbook." Macmillan (annual) . .	10	6
H. R. MILL, "The Realm of Nature: an outline of Physiography." Murray (new edition) 1897	5	0
W. M. DAVIS & W. H. SNYDER, "Physical Geography." Boston and London: Ginn, 1898 ..	4	9
H. F. TOZER, "A History of Ancient Geography." Cambridge University Press, 1897	10	6
J. H. GORE, "Geodesy." Heinemann, 1891 . . .	5	0
J. S. KELTIE, "Applied Geography." Philip, 1890 .	2	6
Total £		9
Less 25 per cent. on books not at net price		1¼
	8	7½

II. Books of Interest.

	£	s.	d.
J. B. REYNOLDS, "Teaching of Geography in Switzerland and North Italy." Cambridge University Press, 1899			
C. DARWIN, "Voyage of the Beagle." Ward, Lock & Co.			
C. DARWIN, "Coral Reefs, Volcanic Islands," &c. Ward, Lock & Co. . .			
COOK'S "Three Voyages Round the World." Routledge			
A. R. WALLACE, "Travels on the Amazon and Rio Nigro." Ward, Lock & Co.			
C. R. MARKHAM, "Life of Christopher Columbus." Philip			
W. BESANT, "Captain Cook." Macmillan			
C. R. MARKHAM, "John Davis, Arctic Explorer and Early Indian Navigator." Philip		4	6
A. H. MARKHAM, "Sir John Franklin and the North-west Passage." Philip			
C. R. BEAZELEY, "Henry the Navigator." Longmans		6	6
H. H. JOHNSTON, "Livingstone and Central Africa." Philip		4	6
F. H. H. Guillemard, "Magellan and the First Circumnavigation of the Globe." Philip		4	6
J. THOMSON, "Mungo Park and the Niger." Philip...		4	6
C. R. MARKHAM, "Major Rennell and the rise of English Geography." Cassell		3	6
Part II	£2	9	6
Less discount at 25 per cent.	0	12	4½
Total	£1	17	1½

Adding together the two divisions, the total cost of the 23 books mentioned comes out at £5 5s. 9d.; but at the time of writing I cannot ascertain the exact cost of one of the books, which may raise the total by a shilling or so.

The selection given above does not altogether satisfy me. To begin with, all school books intended for the use of pupils have been eliminated because of their number, and again, all the larger general treatises have to be left out because of their price. The two most serious omissions on this score are Reclus' great work in nineteen volumes, the new issue of Stanford's "Compendium of Geography and Travel" now in progress, and the serviceable, though anonymous, "Gazetteer of Great Britain and Ireland," published by Cassell & Co.

It may perhaps be desirable to say a few words as to the books included in the lists. "The Times Gazetteer of the World" originally published at a higher price as "Longman's Gazetteer," is the best dictionary of geography in a single volume, and remarkably free from errors. It may be taken as the best authority on the spelling of place names, although opinions differ even amongst the best informed.

"The International Geography" is a new experiment in text-books; the seventy authors are all of high standing in their several departments, so that each section is of independent authority. An effort has, however, been made to unify the whole by prescribing a common plan of work to all the authors, and by the translation of all contributions which were written in foreign languages as far as possible by the same hand.

Mr. Chisholm's "Handbook of Commercial Geography" has long been the standard work on that branch of the subject in English, and as so much of geography depends on economic relationships, it is well to have the book at hand for frequent reference.

Statistics as a rule are to be avoided in teaching a subject, but they form an invaluable aid in studying any question; hence the "Statesman's Year-book" is included. This book is published annually in the early months of the year, but a volume retains much of its value to a teacher even when it becomes somewhat out of date for the statesman for whom it has been prepared.

My "Realm of Nature" has not made much sensation in the educational or any other world but it is a book written with a distinct educational ideal, its aim being nothing less than to elucidate the relation of man to his terrestial environment by tracing the science of the globe through all its phases. In the larger framework of physiography the science of geomorphology, or the origin and nature of the forms of the earth's crust, has a very important place as the transitional zone to human geography, and Professor Davis's "Physical Geography" is unquestionably the best book that has ever been written on the subject. Unfortunately it has been so little advertised or reviewed in this country that it remains almost unknown.

Tozer's "History of Ancient Geography" gives in a pleasant form a summary of the progress of geography up to the close of the Greek period, and mainly follows the lines laid down in the great work of Bunbury. Gore's "Geodesy" is a popular presentation of some fundamental facts, concerning which most teachers are very ignorant, as to the method of ascertaining the dimensions and form of the earth. Dr. Keltie's "Applied Geography" contains several separate essays of a stimulating and helpful character.

The books in the second division scarcely require comment. Miss Reynolds' report on Geographical Teaching in Switzerland is the best separate description I know of the method of teaching geography in the field so much practised in German-speaking countries. The other books are of two classes—cheap reprints of some of the greatest scientific travels, and biographies of epoch-making geographers and explorers whose work was so much a part of their lives that the two could not be treated apart. In these biographies our literature is comparatively rich, and every book noted in the list is of such absorbing interest that the development of the life holds the attention like a novel.

CHAPTERS IN HISTORY.

By A. Johnson Evans, M.A.

VIII.—The Tudor Period.

Till the reign of Henry VII. is reached, it is *possible* to ignore European history in general, though I have shown in previous papers how undesirable such neglect is, and how ruinous to any true understanding of the life and thought of our ancestors. But with the accession of the Tudor dynasty, the very feeblest of our text-books find themselves forced to mention some events at least that are not in themselves and at first part of *English* history.

Columbus and Luther, to mention only two names of world-wide importance, appear in the most elementary of manuals, and it becomes therefore more important than ever that the teacher of history should be prepared to add to the printed manual some simple explanations of the more obvious "foreign" events. For example, would the conscientious teacher be content with this answer: "Columbus discovered America"—except, of course, from the youngest member of Form III.? How much better it would be for the teacher to explain, even to the beginner, how Columbus was not the first of Europeans to discover the mainland, it having been found and lost again in the ninth and tenth centuries. How Columbus did not reach the mainland till his last voyage to western seas, and how, to his dying day, he thought he had found, *not a* new continent, but, what was more pleasing to him, the eastern coast of "India."

And, with the stories of Cortes and Pizarro in his mind, learned from the Prescott volumes borrowed from the school library (they are essentially *boys'* books), could not a most fascinating story be told of the gradual unfolding of the truth as to America, ending, for the first lesson, with the view of the Pacific Ocean bursting on the astonished Spaniards from the heights of Panama?

The writer of the manual which must needs be put in the boys' hands cannot afford even to hint at these delights, because if he began to write his book on this scale, it would cost more to print and publish than an ordinary dinner, and no British parent is willing to pay "such an exorbitant school bill" as that would imply.

Or, take another subject, better adapted perhaps to the Fifth form: The Wars of the Roses had had for their excuse a disputed succession to the English throne. Henry VII. had married *one* Yorkist in order to give his children a more certain title than *he* could possibly possess. But he could not marry the whole family in all its branches. Every Yorkist, therefore, *i.e.*, every descendant of the Richard of York who had died at Wakefield, was a possible claimant, whose very existence, therefore, was a potential danger to the Commonwealth.

But so long as the Tudor family could provide the nation with an undoubted male heir, the danger of civil war could be averted. Yet how badly did the family succeed, or rather not succeed, in giving that security. For nearly thirty years, only the life of Henry VIII. stood between his people and a renewal of anarchy.

So far we confine ourselves to English history. But how the moral of all this may be rubbed in, how real the danger was to the minds of our forefathers, can be understood only by a study of Burgundy and of Brittany, and how in these very years they were being absorbed respectively into the Habsburg and Valois dominions for want of male heirs and a "Salic Law." Because their ducal families had left only a daughter to inherit, they became the object of matrimonial diplomacy, and in the end the possessions of monarchs who cared only for them as means of adding wealth and power to their respective houses. Would England suffer the same fate? It seemed so in Mary's reign.

But the Tudor period contains, above all, that great event in European history which divides, like a great range of mountains, all that went before from all that came after. The "Reformation" ends the "Middle Ages;" it begins

"Modern History" is a subject that the teacher will require all his staying powers, and we may add, all his moral powers as well. Here, above all, he must at least be able to sympathise with the great men of the past, not only of one school of thought but of all.

And yet it is in dealing with this subject that the majority of our text-books fail us so lamentably. We do not refer merely to their constant bias; *that* we could understand and allow for. But their sympathies are so capricious, their judgments so shallow. Wolsey, for example, is a "low-born, arrogant priest" so long as he is in power, but the master who ruins him in 1535-6 makes Wolsey's fortune with the historians. Henry VIII. is the subject of their indignation when he wants to "divorce" Catherine of Aragon, but he is a hero when he "breaks the power of Rome" in order to effect that divorce, changing again to a "bloody despot" when he executes Fisher and More for not assenting to these changes.

We are all surprised or indignant, as the case may be, when we find Henry VIII. "writing against Luther" and winning the title F.D. from the Pope, and shortly afterwards destroying the Pepe's power in England. We fail to distinguish between the various points of difference in the sixteenth and seventeenth centuries. Theology is one thing, ecclesiastical politics is another; and there is a third, the question of liturgy. In other words, the conflicts are threefold: about creeds, about forms of church government, about forms of worship. These are not the same; they are connected very closely, but they are and must be distinguished. Henry VIII. disagreed with Luther on the matter of the Sacraments; he disagreed with the Pope on the matter of church government.

We shall, it is obvious, be detained for some time on the Tudor period, and we hope to return to the subject in later articles. Meanwhile, we recommend to the teacher some books. Let him read Dr. Stubbs' "Lectures" on Henry VII. and Henry VIII., in the volume called "Lectures on Mediæval and Modern History," Dr. Gardiner's 'Henry VII.," and Dr. Creighton's "Wolsey," in the "Twelve English Statesmen" series. Also he should, if possible, read "Lingard," or some later and smaller history written from the "Roman Catholic" standpoint, to correct the too Protestant bias of the majority of our histories.

Here *who is a widow*, is a Co-ordinate clause (See above.)

W. HURST, B.A. (Lond.),
Senior English Master, Nonconformist Grammar Sc.,
Bishop's Stortford.

III.

COMPOUND sentences do not present much difficulty; I, therefore, pass on to the consideration of the Complex Sentence. From the very beginning the pupil should be made to realise that the Subordinate clauses are parts of the whole sentence; and Complex sentences must be analysed first as if they were single sentences, and afterwards the Subordinate clauses must be analysed separately.

I shall once more adopt the principle of substitution in explaining Subordinate clauses, and show that such clauses have the functions of nouns, adjectives, or adverbs in the sentences of which they are parts. I will give one instance of each to illustrate the method generally applicable.

NOUN CLAUSES.

The sentence, "That some hundreds of people were to be hanged without pity is certain," contains two Finite verbs, and therefore two clauses. The construction of the sentence is evidently analogous to that of "Something is certain"; but *something* is a noun and is the Subject of the sentence, therefore "That some hundreds of people were to be hanged without pity" is a Noun clause and is to be taken as the Subject of the Complex sentence. (It is quite unnecessary, and, indeed, as in this example, is often incorrect to speak of a Principal sentence. I do not use the term at all.)

SUBJECT.		PREDICATE.					
	Adjuncts.	*Finite verb.*	*Complement.*	*Adjuncts to Finite verb.*	*Adjuncts to Complement.*	*Object.*	*Adjuncts.*
That some hundreds of people were to be hanged without pity.							
hundreds	1. some 2. of people	were	to be hanged		without pity.		

It should then be shown that Noun clauses may also act as Complements, Objects, &c.

ADJECTIVAL CLAUSES.

In "The evil that men do lives after them," *that men do* is an Adjectival clause; the construction of the whole sentence resembles that of "The evil of men lives after them"; *of men* is an Adjectival phrase; hence, "that men do" is an Adjectival clause, and acts as an Adjunct to *evil*.

but it is a book written with a distinct educational idea, its aim being nothing less than to elucidate [illegible] lation of man to his terrestial env[illegible] [illegible]ing the [illegible] thr[illegible] [illegible]es.

cept, of course, from the youngest me[illegible] Form III.? How [illegible]

			Complement.	Adjuncts to Finite verb.	Adjuncts to Complement.	Object.	Adjuncts.
	1. the 2. that men do	lives		after them			
		do				that	

Adverbial Clauses.

In "A stranger climbed the steepy glade at this moment," *at this moment* is an Adverbial phrase. In the Complex sentence

Just as the minstrel sounds were stayed
A stranger climbed the steepy glade,

the first clause has the same function as *at this moment* in the Simple sentence; it is, therefore, Adverbial.

Subject.		Predicate.					
	Adjuncts.	Finite verb.	Complement.	Adjuncts to Finite verb.	Adjuncts to Complement.	Object.	Adjuncts.
A stranger		climbed		just as the minstrel sounds were stayed		glade	1. the 2. steepy
sounds	1. the 2. minstrel	were stayed		just as			

The above examples have been given as a guide to the method to be employed in illustrating the various functions of Subordinate clauses; the teacher will, of course, treat each kind of clause exhaustively with respect to its grammatical relationship to a word or a phrase.

We will now turn to a few difficulties that will probably arise in dealing with the Complex sentence.

Mistaken Substitutions.

The fact that a Noun clause may take the place of the noun *something* in a Simple sentence occasionally leads beginners to confuse such a clause with an Adjectival one. Thus, in the sentence,

I know a bank whereon the wild thyme blows,

the line of argument taken is—I know *something; something* is a noun, therefore *a bank whereon the wild thyme blows* is a Noun clause. Of course, the reasoning is incorrect. The words, *a bank*, are no part of this so-called clause, but belong to the whole sentence. As a matter of fact, *a bank* is the substitute for the *something*; but *a bank* does not form a clause—it does not contain a verb. *Whereon the wild thyme blows* is the clause, and it is Adjectival.

Quoted Speeches.

Consider the sentences:—

(1) You have said you will not grant us anything.

(2) Thou shouldst have said, "Good porter, turn the key."

In (1) the actual statement is not quoted, in (2) it is. *You will not grant us anything* is a Noun clause, and is the Object of the sentence; "Good porter, turn the key," is the Object of (2), but it is not a Noun clause. It is a Simple sentence; it does not enter into the construction of the whole sentence in the same way as *you will not grant us anything* enters into the construction of (1). We can say *You have said* that *you will not grant us anything*, but not *Thou shouldst have said* that "*Good porter, turn the key.*" Quoted speeches are not noun clauses.

Dependent Questions.

The sentence,

I know what you know.

has two meanings:

(1) I know as much as you.

(2) I know the answer to the question, "What do you know?"

When the sentence has the latter meaning, *what you know* is a Dependent Question, and is a Noun clause. Similarly in "I wonder what you gave her," *what you gave her* is a Dependent Question and a Noun clause. But, in "This is what he gave her," *what he gave her* is an Adjectival clause used as a Noun clause. (What=that which.)

Clauses Adjectival in Form Only.

An Adjectival clause must indicate restriction of some kind. *Who lives here* is not restrictive in, "My only brother, who lives here, has travelled in Australia." The "only" shows that the speaker cannot, as regards number, further restrict the application of the noun. Hence we have here not a Complex sentence, but a Compound one, consisting of two Co-ordinate clauses.

A similar instance is seen in "The troops evacuated London, where they had been staying for some days." The meanings of such sentences as—

(1) My brother who lives in London has travelled in Australia;

(2) My brother, who lives in London, has travelled much;

should be differentiated by the punctuation. Unfortunately, this practice is by no means uniform among the best writers.

THE CLASSIFICATION OF CLAUSES.

The teacher should be careful to point out that the only way by which we can determine to what class a Subordinate clause belongs is by considering its function in the sentence of which it is a part. The form of the clause is not a guide; the same word may be introductory to any kind of clause. Take, for instance, *that*, in these examples:—

(1) He knows *that* he is wrong.

(2) They have sold the estate *that* belonged to them.

(3) This I did *that* you might not be offended.

In (1) *that* is a conjunction, and introduces a Noun clause—the Object of the sentence. He knows *something*.

In (2) *that* is a Conjunctive pronoun, and is the Subject of the Adjectival clause, *that belonged to them*. They have sold *their* estate.

In (3) *that* is a conjunction, and introduces an Adverbial (Final) clause.

WHO—AND WHICH—CLAUSES.

These pronouns may appear in any kind of clause. We shall illustrate this statement by considering the following examples:—

(1) His mother, who is a widow, is ill.

Here *who is a widow*, is a Co-ordinate clause (See above.)

(2) Ask who he is.

Who he is is a Noun clause, being a Dependent Question.

(3) The soldier who is now entering the room will be shot to-morrow. The Who-clause is Adjectival—it restricts the application of the noun, *soldier*, to a particular individual.

(4) They appointed an umpire, who was to settle the point.

(5) He is a man who cannot brook an insult.

(6) But the king, who feared the people, would not consent.

(7) Even the gaoler, who was hardened to such sights, was moved to pity.

The Who-clauses are all Adverbial, expressing, respectively, Purpose, Result, Cause, Concession.

The analysis of a fairly long, but, as will be seen, easy Complex sentence, will now be given, and with this the series will conclude. Necessarily the treatment has been "sketchy" only, but my aim has been, not the examination of complexities and minute distinctions so much as the insistence on, and illustration of, the fact that the analysis of sentences may become an effective factor of mental discipline when treated on the lines I have attempted to indicate.

EXAMPLE FOR ANALYSIS.

"When I think how welcome the sight of a letter from the world where you were born must be to you in that strange one to which you have been transplanted, I feel some compunctious visitings at my long silence."

Complex sentence. The whole.

Words having Clauses dependent on them.	Clause.	Kind.
feel	*when . . transplanted* (*a*)	Adverbial.
think	*how . . transplanted* (*b*)	Noun.
world	*where you were born* (*c*)	Adjectival.
one	*to which . . transplanted* (*d*)	Adjectival.

SUBJECT.		PREDICATE.					
	Adjuncts.	*Finite verb.*	*Complement.*	*Adjuncts to Finite verb.*	*Adjuncts to Complement.*	*Object.*	*Adjuncts.*
I		feel		1. at my long absence 2. Clause (*a*)		visitings	1. some 2. compunctious
I		think		when		Clause (*b*)	
sight	1. the 2. of a letter from...born	must			how welcome ...transplanted		
you		were born		where			
you		have been transplanted		to which			

THE MATERIAL REQUIREMENTS FOR THE TEACHING OF SCIENCE.

By A. E. MUNBY, M.A.
Senior Science Master at Felsted School.

IN these days when the necessity of science teaching in a school curriculum is so generally recognised, and money is so lavishly spent upon this object, it may be of interest to describe in some detail the arrangement and fittings of a modern school laboratory. With this thought in mind, the editors have honoured me with a request for a description of the new laboratory just completed at Felsted. The many excellent arrangements of the laboratories belonging to our public institutions, though valuable as an object lesson individually, are hardly so, to the schoolmaster, collectively, since their scope is generally beyond his requirements. That much may be done where funds at disposal for the purpose are very limited, will be shown in a subsequent number of this publication.

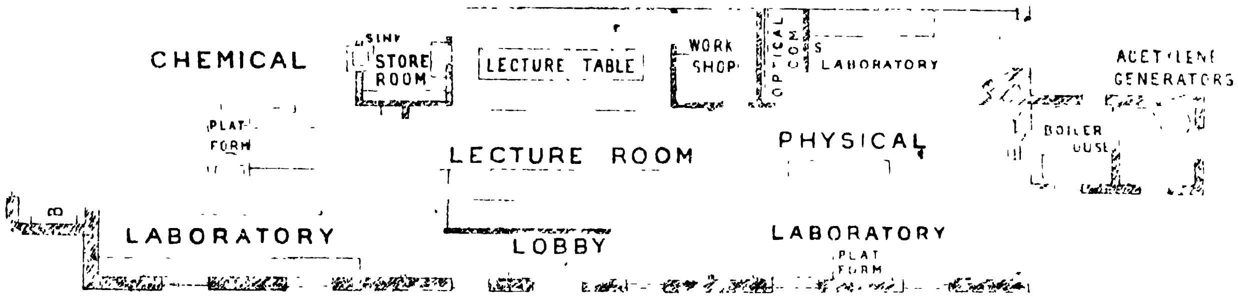
The laboratory at Felsted is situated in the playing fields, some two hundred yards from the main school building; it is all on one—namely, the ground-floor, and some expense has been saved by utilising a wall of the swimming bath in its erection. The building is about one hundred feet long by twenty-six feet wide, of red brick, roofed and in three gables running at right angles to the length of the building, each furnished with lantern top lights, the sides of which all open. The roofs are not ceiled, which considerably increases the cubic contents of the rooms.

A glance at the plan of the building (Fig. 1) shows that it is divided into three main rooms, a chemical laboratory, lecture room, and physical laboratory. The entrance lobby, though a certain sacrifice of space, is almost essential for a detached building, and secures the desirable object of permitting transit from one laboratory to the other without entering the lecture room. The floor of the building (with the exception of the lobby, which is tiled) is laid in wood blocks which, while rendering the drainage rather less accessible, minimises vibration.

THE CHEMICAL LABORATORY.

This room, which contains two double and two wall benches, accommodates twenty-six boys, allowing the regulation length of bench as usually recognised—viz.: three feet six inches,—for each worker. The room also possesses a bench some eighteen feet long for special work, distillations, &c., under which are shelves for general apparatus. At each end of this bench is a draught cupboard, the larger of which contains a sink, the water-cock supplying this, as also the gas-cocks, being outside the cupboard. The panes of these cupboards slide vertically with a brass rachet, which does away with lines and pulleys. Turning again to the working benches, only the central ones possess re-agent shelves, qualitative analysis being considered an advanced subject and only taken up by the minority. The thorny question as to the utility of drawers and lockers has been decided in their favour, as more readily admitting of half finished experiments being subsequently completed, and inducing a care which attaches to personal property. The boys have no keys; all lockers answer to one key, and are opened by the assistant before each class. This is very rapidly done, since the names of each class are slipped into brass plates on a label of a distinctive colour; the locks, moreover, are "snap-locks." The benches possess twelve fume boxes with hoods, which enable experiments involving noxious gases to be carried on without crowding the draught cupboards, an important consideration with large classes doing descriptive work. The exhaust for these boxes and the cupboards is obtained by a special flue at the end of the building, operated by a special fire, or by gas jets, or by the fire used for the warming of the building, which is effected by hot water radiators. In each case all the air for combustion is sucked through the fume boxes, which give very good results when too many are not opened at one time. This arrangement was copied from Merchant Taylors' School. The glass of these hoods is fifteen ounce window glass, and can at once be replaced if broken. The fittings of this room and throughout the laboratory, are of pitch pine, bench and table tops, being of teak well impregnated with oil. A novel feature of the chemical laboratory is the demonstrator's table in the centre of the room on a platform slung across the central benches. This takes up the [illegible] of space and gives a commanding view of all the benches, saving much time and labour usually spent in running about. From this platform the balance room, a well lighted room fifteen feet by six feet, can be scrutinised, since it is separated from the laboratory by a glass partition, and further, two windows placed in the opposite walls of the lecture room enable a view, right through to the end of the physical laboratory, to be obtained. The colouring of this laboratory has received special attention, no lead paints having been used after the priming, the paints employed being Orr's zinc white and real chrome green. The water supply, which may be here mentioned, is obtained from the school buildings, and give a head of forty feet, enabling pumps for rapid filtration to be advantageously used. The water-cocks are what are known as "quarter-turn cocks" which do away with the labour of screwing incident to the ordinary high pressure cock, and the nozzles of these cocks are contracted for making rubber connexions. The sinks are white glazed ware with flat bottoms, which enable them to be used as pneumatic troughs; they are fixed under the bench tops, and thus allow spilt liquids to be swept directly into them, the under side of the bench edge being throated to prevent water running back into the lockers.

Adjoining this laboratory is the store and preparation room, some nine feet square, well provided with shelves and cupboards



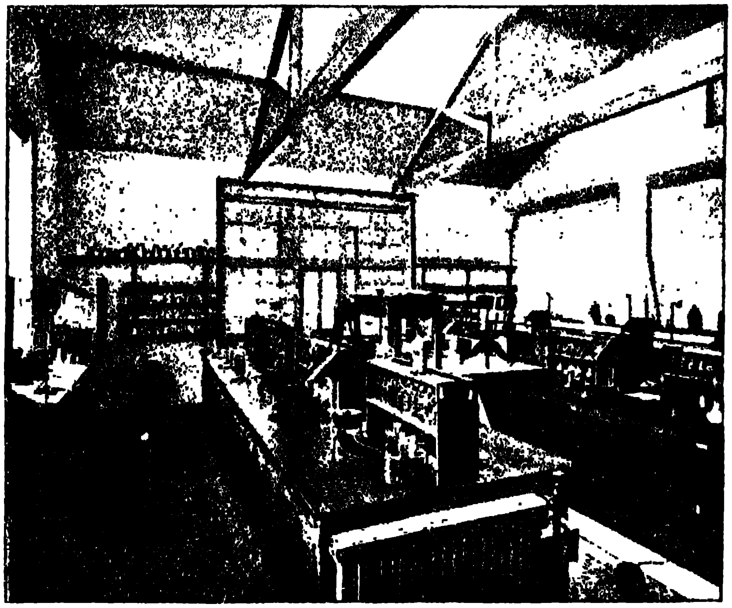
1.—Plan of new Science Buildings at Felsted School. (*Scale, $\frac{1}{16}''$ to a foot, nearly.*)

and possessing a good sink and draught cupboard with slate base, which can also be used from the lecture-room.

The proximity of this room to both laboratory and lecture table should be noticed, its projection into the lecture room also utilising a space very often wasted, viz., that beyond the end of the lecture table, which cannot well be used for seating.

THE LECTURE ROOM.

In this room is raised seating to accommodate over thirty boys when writing, and the space over the lobby is thrown into this room as a gallery, providing additional room for a general audience. The lecture table of teak and pitch pine is on the floor level. It is supplied with a down draught worked by the same flue as that operating the fume-boxes, and has also at command twelve ampères direct current, through a variable resistance, supplied from the school dynamos. A branch from the main leads to a double pole switch at the back of the room for an arc lantern, which can project upon the wall surface behind the lecture table, giving a disc twelve feet in diameter, faced in Parian cement, painted white and finished with two coats of "whiting," providing the best "sheet" it is possible to obtain. A long blackboard hung on the Kelvin suspension principle slides in front of this wall surface. This room, as well as the physical laboratory, can be darkened by a blind drawn horizontally across the lantern light. The lecture room can be completely shut off from the chemical and physical laboratories; the doors between these rooms being provided with lever handles, a convenience where apparatus is carried to and fro, since they can be opened and shut with one finger.



The Chemical Laboratory, Felsted School.

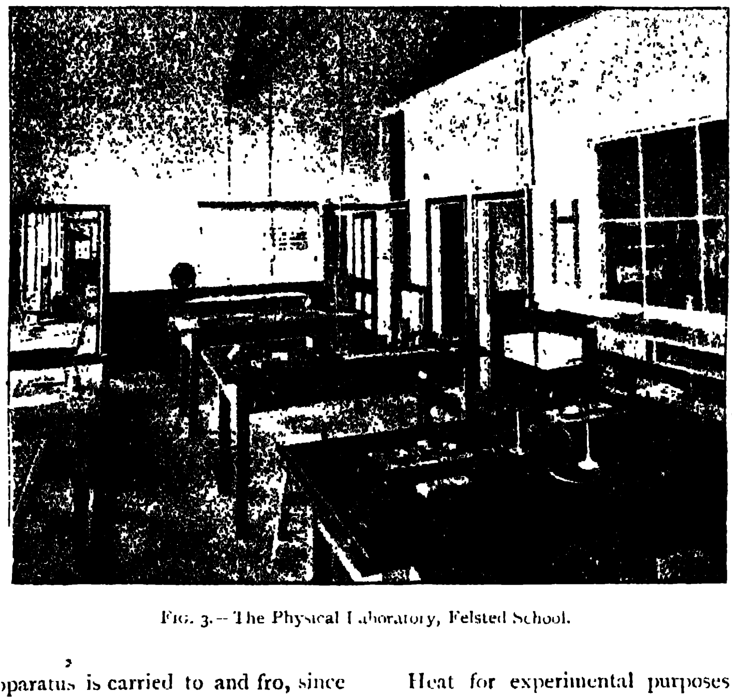


FIG. 3.—The Physical Laboratory, Felsted School.

PHYSICAL DEPARTMENT.

Passing on to the physical department, we enter a small workshop and store room containing a carpenter's bench, Stephen's quick-acting vice, a drill for metal work, and a selection of ordinary tools in constant requisition.

The general physical laboratory contains six tables measuring six by three feet, the tops of teak, with a groove for collecting spilt mercury and a good overhanging edge for clamping apparatus thereto. Each table has two drawers, and in the central tables these are placed on opposite sides. Four boys working in pairs can be stationed at each table, so that these, with a smaller table for two boys, provide the same accommodation as the chemical laboratory. These tables are not fixed, gas is supplied from pendants from a main running along the tie beam of the roof. These pendants are jointed, and can be doubled up to a height of seven feet from the ground when the proximity of iron is undesirable, or when the tables are removed. One large sink with water supply, a table fixed to the wall for balances and general apparatus on shelves below, and a demonstrator's desk and platform, complete the equipment of this room.

Leading from this laboratory is an optical room containing a bench three metres in length, graduated with a vernier on the sliding instruments reading to millimetres. A second door leads to a special laboratory, in which the better physical instruments are kept. Such a room is valuable, since it enables more advanced experiments, which have perhaps taken the whole of a lesson to set up, to remain intact until opportunity admits of their completion. This room also contains the termination of the electric mains, and one end of it is furnished as a sanctum wherein the secretarial business of the laboratory can be conducted. From this room a telephone connects the building with the school.

Heat for experimental purposes is supplied by acetylene generated in a house attached to the building, and stop-cocks are provided which admit of any of the three rooms, or the whole building, being cut off—a great safeguard where so many jets are used. Acetylene confers a great boon upon laboratories which possess no coal-gas supply. At Felsted the gas has been successfully used since 1896, with special Bunsen burners designed for the purpose. The gas burns under about six inches water-pressure, the burners consuming about one cubic foot of gas per hour, and giving about twice the heating effect of an ordinary Bunsen. The building is at present lighted by acetylene, though electricity will be installed as an alternative, on the completion of the enlarged plant now being erected at the school. Ample ventilation is secured to the building by Boyle's wall ventilators and deep inside beads to the windows, allowing ventilation between the sashes.

As regards the work carried on in the building. The lowest forms start with very elementary physics (mensuration, mechanics, and heat). The middle forms go through a general course of chemistry, the practical work being of a descriptive character. The higher forms study either optics and electricity and other branches of physics in a more advanced way, or more advanced chemistry, the practical work being with these forms chiefly quantitative All boys learning science do some practical work which runs as far as possible parallel with their class work.

The laboratory has been approved by the Conjoint Medical Board for Chemistry and Physics, thus enabling medical students to spend six months of their course at the school, and arrangements are pending for the introduction of biology, which will increase this period to a year.

TEACHERS' NOTES ON ENGLISH HISTORY, 1603-1715.

By C. S. Fearenside, M.A. (Oxon), and L. J. McNair, B.A. (Cantab.)

III.—The Reign of Charles I, 1625-1649.

The reign of Charles I. is only about two years longer than that of James I., yet it generally occupies from three to four times as much space in our text-books. This wealth of detail makes it the more necessary to single out the essential points. The following notes should be read in close connection with the generalisations set forth in Notes I of this series. They do not profess to be exhaustive: for instance, in respect of *documents*, only those are mentioned which are especially *worth reading in full*; there are many other documents, not named here, about which it is necessary to know something.

I. Distinctive Features of Charles I.'s Reign.

(i.) Charles I.'s Personal Character: less intelligent but more persistent and more attractive than his father's. He was so certain that his *ends* were right that he was not particular as to the *means*: hence he aroused the rooted distrust in him which forced his opponents in self-defence to impose ever fresh restrictions upon him and ultimately to send him to the block.

(ii.) The Growing Belief of Parliament in the necessity and in the practicability of its interference with the sphere of government, ecclesiastical as well as civil.

(iii.) No Foreign Policy—that came to anything after the Villiers Period, 1625-8. The Continental struggles called the Thirty Years' War and the *British* Constitutional struggles flowed on side by side without *much* intermingling. *N.B.*—Charles I.'s family connexions on the Continent.

(iv.) Marked Influence of the Three British Kingdoms upon one another. Charles I.'s Laudian policy in Scotland provoked the Scots Resistance; that necessitated the summoning of the English Long Parliament; the Irish Rising of 1641, after the recall of Wentworth, precipitated the Great Civil War in England; and the civil wars in the three kingdoms closely affected one another.

II. Principal Stages in the Reign.

(i.) Charles's First Three Parliaments, **1625-1629.**

(1) *Chief Personalities:* **Buckingham, Eliot.**

(2) *Chief Characteristic:* "alternate *ex*peditions and *im*peditions." The *ex*peditions (against France and Spain) were a part of a Protestant foreign policy, meant to be vigorous and popular. the *im*peditions were the hindrances offered by Parliament to the carrying out of these foreign schemes, owing to (*a*) the methods of raising the money required, (*b*) its distrust of their designer, Buckingham.

(3) *Chief Documents.* *PETITION OF RIGHT*, 1628; His Majesty's Declaration prefixed to the *Thirty-Nine Articles* in the *Book of Common Prayer*.

(ii.) Eleven Years' Unparliamentary Rule, **1629-1640.**

(1) *Chief Personalities:* **Laud, Wentworth, Hampden.**

(2) *Chief Characteristic:* Thorough—*i.e.*, the attempt to make the King an effective ruler of all his territories—English, Scots, Irish, and Colonial. Taxation by Prerogative; "Arbitrary" Imprisonment; Standing Army; Religious "Innovations."

(3) *Chief Document* *SCOTTISH NATIONAL COVENANT*, **1638.** *N.B.*—This was the **second** Covenant: the **first** was drawn up in **1581.** Neither must be confused with the document of **1643** (see below, *sub.* **v.** 7).

(iii.) Civil Reforms of the Long Parliament, **1640-1.**

(1) *Chief Personality* **Pym.**

(2) *Chief Characteristics:* unanimity in the English Parliament, and its practical support by the Scots Army.

(3) *Chief Document* *Tunnage and Poundage Act.*

(iv.) Parliamentary Split on the Question of Ecclesiastical Reform, **1641-2.**

(1) *Chief Personalities:* **Hyde, Falkland.**

(2) *Chief Characteristic* the definite formation of parties—**Royalist** and **Parliamentary.** (Note their later developments, especially **1646-1660** and **1679-1681.**)

(3) *Chief Document* *GRAND REMONSTRANCE.*

(v.) The First Civil War, **1642-1646:** *Notabilia.*—

(1) *Extent:* not confined to England.

(2) *Causes* mutual distrust of King and Parliament—illustrated in the constitutional points raised.

(3) *Composition of the Rival Parties* social and geographical

(4) *Military Conditions of the War* amateurishness on both sides, gradually giving way to the rise of professional soldiers.

(5) *Military Aspects of the War* best followed on a physical map, tracing the main *object*, *courses* and *results* of each *campaign*, and not paying much attention to the details of *battles*, except Marston Moor and Naseby. (See Dr. Gardiner's *School Atlas*, plates 29, 30, 31.)

(6) *Personalities* **Hampden, Pym, Essex, Manchester, Fairfax, Cromwell, Leven, Montrose, Ormonde.**

(7) *Documents:* *SOLEMN LEAGUE AND COVENANT*, **1643**; *Self-Denying Ordinance*, **1645**; also the various negotiations for a settlement, mostly characterised by Parliamentary insistence on securities not against *King*, but against *Charles*.

(vi.) Triangular Duel—King, Parliament, Army (Scotland intervening), **1646-1649.**

Note the essential differences of **Episcopacy, Presbytery, Independency,** as illustrated in:—

(1) Westminster Assembly of Divines.

(2) Terms offered to the King by Parliament and Army respectively.

(3) Second Civil War, 1648.

III. Miscellaneous Points.

(i.) Map-Work. The main thing is to be able to illustrate by maps the course and consequences of each campaign.

(1) **1642** Charles's March on London: checked by Essex.
N.B.—Position of Essex.

(2) **1643** The three sieges of Hull, Gloucester and Plymouth delay and finally destroy the proposed triple march on London.

(3) **1644** Scots intervention turns the scale in the North: Irish *Cessation* abortive. } Montrose's movements.

(4) **1645** The New Model Army at Naseby.

(5) **1646** The isolated local resistance to Parliament.

(6) **1648** Four centres: (*a*) Kent, (*b*) Essex, (*c*) S. Wales, (*d*) Lancashire.

(ii.) TWENTY PARTY NAMES.

Agitators, *Cavaliers*, *Confederate Catholics*, *Congregationalists*, *Covenanters*, *Delinquents*, *Engagers*, *Episcopalians*, *Erastians*, *Fifth Monarchy Men*, *Independents*, *Libertines*, *Malignants*, *Papists*, *Parliamentarians*, *Presbyterians*, *Protesters*, *Puritans*, *Roundheads*, *Royalists*.

Sort these out into groups of opposites, and notice how more than half of them are distinctly ecclesiastico-political.

(iii.) TEXTS (for Talks or for Problem work).

(1) "I will not allow any of my servants to be questioned among you, much less such as are of eminent place and near to me" [Charles I. to First Parliament].

(2) "The House of Commons is for counsel, not for control" [Charles I. concerning Second Parliament].

(3) "All our petition is for the laws of England" [Pym in Third Parliament].

(4) "Though our Achan is cut off, the accursed thing remains" [Eliot, after Buckingham's murder].

(5) "The King is as absolute here as any prince in the world can be" [Wentworth, writing from Ireland to Laud].

(6) "I fear to draw on myself that curse in *Magna Carta*" [Hampden, concerning **Ship-Money**, in 1637].

(7) "We cannot do without them, the Philistines are too many for us" [Strode, concerning the Scots army, in 1640].

(8) "This ill news of Ireland may hinder some of these follies in England" [Charles, after the Ulster Rising, October, 1641].

(9) "No Bishops! No Popish Lords!" [London mob in December, 1641].

(10) "The birds are flown." "Privilege! Privilege!" [In the Commons, January 4, 1642].

(11) "Do you think the spirits of such base and mean fellows will ever be able to encounter gentlemen?" [Cromwell to Hampden, after Edgehill].

(12) "Peace, Peace" [Falkland's death-cry at Newbury, 1643].

(13) "I have no reverence for the bishops for whom this quarrel subsists" [Verney to Hyde].

(14) "Toleration is a great design of the Devil" [Presbyterian saying].

(15) "New Presbyter is but old Priest, writ large" [Milton].

(iv.) BOOKS for the further study of Charles I.'s reign. No period of English history has been more written about: which fact makes selection both necessary and difficult. The following list is suggestive only: it leaves the ultimate work of selection to the teacher, who knows best his needs, taste and time.

(1) Sources. All the documents mentioned above are worth reading, and all are printed in Gardiner's "Constitutional Documents of the Puritan Revolution." Colby's "Sources of English History" contains the first draft of the charges against Strafford and Nehemiah Wallington's account of Edgehill. Hart's "Source-Book of American History" (Macmillan, 3s. 6d.) contains a number of accounts of the foundation of, and life in, the early colonies in America.

(2) Biographies. The following are good, though on a small scale:—

Montrose	...	by MOWBRAY MORRIS	Macmillan, 2s. 6d.
Strafford	...	,, H. D. TRAILL	,, 2s. 6d.
Oliver Cromwell		,, FREDERIC HARRISON	,, 2s. 6d.
,,		,, JOHN MORLEY	now appearing in the *Century Magazine*
Laud ..	...	,, W. H. HUTTON	Methuen, 3s. 6d.

(3) Imaginative Works. Milton's Early Poems, especially his Sonnets, Selden's *Table Talk*, Browning's *Strafford*, Dickenson's *From King to King* (Geo. Allen, 3s. 6d.). Historical novels abound on this period: for grown-ups, at any rate, the most suggestive is Mr. Shorthouse's *John Inglesant*.

THE compilers of these Notes return thanks for suggestions received: they would be glad to receive from teachers information as to topics in which they feel the need of help, suggestions and criticisms. Letters should be marked outside "Oxford History," and addressed to the Editors of THE SCHOOL WORLD.

THE SALARIES OF ELEMENTARY SCHOOL TEACHERS.

UNIVERSITY graduates have frequently had their attention directed during recent years to public elementary schools as offering a desirable field for useful and honourable work; and so much has been done towards making it easy for high-school girls to become mistresses in these schools that information respecting the salaries which can be commanded by elementary school teachers cannot fail to be of interest.

The recent Report of the Committee of Council on Education (1899) clearly summarises the information on this subject, and we here reprint what is said on this question in the report, so that those men and women who have received their education in secondary schools, and later at the universities, may know exactly what to expect if they take up this work.

The following table of the salaries now enjoyed by the masters and mistresses of public elementary schools, when compared with those published from time to time in former reports of the Department, shows the marked improvement which has taken place of late years in the position and prospects of certificated teachers:—

CERTIFICATED MASTERS.

Number and percentage in receipt of Salaries of

	Under £50	£50 and under £100	£100 and under £150	£150 and under £200	£200 and under £250	£250 and under	£300 and under £400	£400 and under £500	£500 and over.*	Total.
Principal	19 ·1	3,001 23·6	5,327 41·8	2,343 18·4	1,123 8·8	491 3·8	412 3·3	24 ·2	6 ·0	12,746 —
Additional	33 ·3	5,630 57·5	2,927 29·9	1,196 12·2	12 ·1		1 0	— —	— —	9,799

* Viz.: Four between £500 and £600, one between £600 and £700, and one between £800 and £900.

CERTIFICATED MISTRESSES.

Number and percentage in receipt of Salaries of

	Under £25	£25 and under £50	£50 and under £75	£75 and under £100	£100 and under £125	£125 and under £150	£150 and under £200	£200 and under £250	£250 and under £300	£300 and under £400	Total
Principal		334	6,617 38·4	5,220 30·4	2,387 13·9	1,145 6·6	854 5·0	518 3·0	108 ·6	15 ·1	17,198 —
Additional		1,575 8·7	8,777 48·2	23·3	2,707 14·0	870 4·7	10 ·1	— —			18,198

The average salary of a certificated master, which in 1870 was £94 2s. 1d., is now £124 4s. 11d.; that of a schoolmistress was £57 11s. 1d. in 1870, and is now £83 1s. 1d. In addition to their other emoluments 6,014 out of 22,545 masters, and 4,494 out of 35,396 mistresses, are provided with residences free of rent; these averages are calculated upon the whole of the certificated teachers (where returns are given) whether principal or additional.

These figures are useful as showing the increase that has taken place in the emoluments of a certificated teacher during the last 25 years, but they are misleading as a test of the salary paid to the principal teacher. In the earlier years of the Elementary Education Act, certificated teachers were in great demand, and we find in the reports of that period paragraphs dealing with fears that had been raised lest the great increase of schools should not be met by a corresponding increase in the number of certificated teachers; and various expedients were adopted to increase their number. Almost without exception all the certificated teachers were then in charge of schools, while in the present day about half the certificated teachers are teaching as assistants. Thus, out of the 22,545 certificated masters whose salaries are given, only 12,746, or 56·5 per cent., are in charge of schools; and out of the similar 35,396 certificated mistresses, only 17,198, or 48·5 per cent., are in charge of schools. In order, therefore, to show the rise that has taken place in the salaries of principal teachers we must compare the salaries of all certificated teachers (say) 1874 with principal teachers only, in 1898. Thus we find that the £106 18s. 4d., the average salary of a certificated master in 1874, has risen to £142 0s. 7d., an increase of 32·7 per cent. in 24 years: and the £63 12s. 8d., the average salary of a certificated mistress in 1874, has risen to £91 15s., an increase of 44·4 per cent. in 24 years.

In the following table is shown the improvement that has been effected since 1874 in the salaries of all certificated teachers, and also the greater improvement that has been effected in the salary of principal teachers only:

Percentage of Certificated Masters who are in Receipt of Salaries of—	1874. All Certificated Masters	1898. All Certificated Masters.	Principal Masters only.
£300 a year and over	·33	1·96	3·46
£200 ,, ,,	3·27	9·17	16·13
£150 ,, ,,	12·44	24·87	34·52
£100 ,, ,,	48·84	61·48	76·30

Percentage of Certificated Mistresses who are in Receipt of Salaries of—	1874. All Certificated Mistresses.	All Certificated Mistresses.	Principal Mistresses only.
£200 a year and over	·03	1·81	3·72
£150 ,,	·38	4·24	8·68
£100 ,,	5·46	24·33	29·21
£75 ,,	23·83	51·05	59·57
£50 ,,	78·99	94·54	98·04

We may mention, with regard to the principal teachers in the metropolitan district, that, in the past year, the average salary of 353 masters in voluntary schools was £162 19s. 4d., and that of 441 masters in board schools £293 3s. 4d., while 897 schoolmistresses in board schools enjoyed an average income of £205 12s. 10d. as compared with £97 17s. 1d., that of 787 mistresses in voluntary schools. The salaries of 8 masters in voluntary schools, and of 257 in board schools, amounted to £300 a year and upwards, while 5 schoolmistresses in voluntary, and 535 in board schools, had salaries of £200 and upwards.

A NEW DAY-SCHOOL OF COMMERCE.

Representatives of the Bradford Chamber of Commerce and Bradford Grammar School have, in conjunction with the inspectors of the County Council of the West Riding of Yorkshire, arranged a scheme for a Day School of Commerce at the Grammar School, Bradford. The course suggested is intended for boys between fourteen and seventeen years of age who have previously had two years' training in a School of Science, or who can pass a satisfactory examination in English, French or German, Mathematics and Science. The lessons, each of which is to be of fifty minutes' duration, are allocated throughout the week as below:—

Group of Subjects	Subject.	Number of Lessons per week.	2nd year		Total Lessons per week for each group of Subjects 1st	2nd year.	3rd year.
Languages	English ...		4				
	French ...		6		16	16	16
	German ...		6				
Science and Art	Mathematics		4	4		[illegible]	
	Science ...		4	4	11		
	Drawing ...		1	--			
Commercial	Geography and History			4			
	Business Methods ..			2	6	8	9
	Bookkeeping			2			
	Economics ...			1			
		33	33	33	33	33	

It has been decided that the work throughout the three years' course shall be periodically tested by inspection, and that written examinations shall not be employed. Detailed syllabuses of each of the subjects in the above table have been drawn up, and the parts of a subject to be studied in each of the three years clearly specified.

These detailed schedules will repay a careful examination, supplying as they do abundant evidence of a clear knowledge of educational principles joined to an intimate acquaintance with the exigencies of commercial life. We notice with satisfaction the recommendation that arrangements should be made, under the head of English, for instructions in scripture-knowledge and ethics. The provision for a training in original composition in each year of study, passing by easy steps from easy letter writing to the extension and condensation of literary matter, and finally to the writing of letters in series, is worth emulation in other centres. In the French syllabus conversation and composition go hand in hand with the study of grammar; and in German, too, there is the same judicious combination of oral teaching, grammar and composition.

Due emphasis is given to contracted methods of calculation, and to the metric and other foreign systems of weights and measures in the prescribed course of mathematics, and the application of these points to commercial requirements is strongly insisted upon. We are inclined to doubt the wisdom of postponing the use of logarithms to the third year. A mechanical use of mathematical tables, or a slide rule, from the commencement of the course, would go a long way towards ensuring an intelligent appreciation of their theoretical significance in the third year.

Before entering the School of Commerce, boys are required to give evidence of having a good grounding in physics and chemistry. The chief object of further science teaching is to give a general knowledge of the composition, structure and properties of substances belonging to the mineral, vegetable and animal kingdoms, and to secure a broad elementary knowledge suitable as a foundation for advanced or specialised work in any of the directions likely to be followed up later in connection with commercial as contrasted with industrial life.

The time devoted to science, therefore, is to be divided somewhat as follows:—

First year.	Second year.	Third year.
Elementary Geology and Mineralogy—2 lessons weekly. Elementary Biology—(Botany and Zoology) 2 lessons weekly.	An average of one lesson weekly each:— Geology and Mineralogy. Botany. Zoology. Applied Chemistry.	An average of one lesson weekly each: Geology and Mineralogy. Botany. Zoology. Applied Physics.

All lessons will combine demonstration and practical work. The teaching will be rendered practical in character, as far as possible, by visits for field work under competent guidance, *e.g*, to cliffs, river beds, quarries, ponds, streams, woods, &c. and in the third year by similar visits to mines, mills and other works affording illustrations of the applications of science to commercial undertakings. It is recommended that museum of natural products for practical teaching purposes should be provided in connection with the instruction in geography and history, and also that specially prepared lantern slides should be used. The syllabuses in these subjects afford proof of the growing tendency to bear in mind a boy's future in prescribing his studies, while at the same time making his work truly educational. The lessons in business methods which find a place in the time tables of each of the three years' work are to be concerned with the correct methods of conducting commercial operations and correspondence, and of making out documents incidental to the trade of the United Kingdom, and it is rightly urged that *fac-simile* documents should be employed in every case. The study of economics is confined to the work of the third year, and is to include a consideration of production, organisation of commerce, distribution and exchange.

THE SCHOOL PULPIT.

NOTABLE PASSAGES FROM SERMONS PREACHED IN PUBLIC SCHOOLS.

The Life of a Public School.[1]

IT appears to me that in the life of a school, just as in the life of each member of it separately, we can trace a unit, which is made up of three different elements—body, soul and spirit, kept separate, but melted into one. There is the body, the buildings—by themselves cold, voiceless, dead. Not far from here there stand buildings of a school once filled with a life almost as populous, almost as vigorous, as that which peoples these buildings now. But they are empty—a skeleton without life. For a week I have been here seeing these rooms vacant and untenanted, but busy with the work of preparation, and now they are filled—we have the second life. The bells call you to your usual tasks, your usual services. The life begins again under changed conditions, but with its old routine. The formal succession of work and meals and games and rest; this in its external regularity is the second stage—what we may call the animal life. But a school wants something more if it is to be a great school and a good school, nay, if it is to exist as a school at all. It needs a spirit, it needs first that which separates animal from man—a consciousness of itself, a feeling that it is a definite, separate, living unity, a persuasion that it has a duty, a destiny and purpose—in a word, a character. It must *not* be a place where boys are forced round a formal mill, without thought or reflection or excitement or enthusiasm. It must stand out before the imagination as a thing to be lived for, it must be impressed upon the heart as a thing to be loved. It must have an individuality, a distinction, something which marks it as separate from the whole world beside. If a school has life, it must have distinction; you can make in a carpenter's shop two boxes exactly alike, but you cannot make two trees grow exactly alike. And if a school has this highest life, that life will make it different from all other schools, some traditions will be worked out which are its own, which cannot be transplanted otherwhere, they belong to it, they mark it out, to the world outside perhaps, to some extent, but to its own sons most of all, as their mother which has borne and nursed them.

And this is the case with Radley. It is one of the youngest of our public schools. It is still looking forward to its fiftieth birthday, and yet there is not the slightest doubt that it has in it a life quite of a distinct pattern. I say what I know, what I have heard people say long before I thought of bearing myself any responsibility in this place. I felt it twenty years ago, when I was asked to join its staff. I feel it more strongly than ever now that its chief direction is in my hands. It is a remarkable thing, and we ask how it can be explained. It comes from the same source as the personality, as the character of every one of us. God breathed into it the breath of life, and from the outset Radley became a living self. I want you this morning to think on this mysterious fact of personal character, as it affects yourselves and the school of which you are members. God has a separate purpose for you and for me. To every one of us, *every one*, is given grace according to the measure of the gift of Christ. All petty ambitions, all miserable cowardice and faintheartedness, all base treachery and faithlessness, must be swallowed up in this profound conviction. God has some work for me to do in this world, and he has given me a grace to do it.

It was the personality of our founder, William Sewell, that made Radley. He was a man unlike other men; there was about him a charm, a distinction, an infectious enthusiasm; he impressed upon the place in minute detail the marks of his own character. Of course there are some people who cannot attract attention in other ways, who make themselves conspicuous by strange dress and affected manner. And there are some people who do not know, who are inclined to say that what gave Radley its distinction in the early days was just the outside of baronial chairs and silver plate. Nothing could be more untrue. The personality of a man, to be worth anything, must spring from his heart, and not from the fashion of his waistcoat; and the vigorous life of this place, which has carried it through so many crises of varying fortunes, is too strong, is too remarkable, to have sprung from an æsthetic fancy for antique furniture and silken hangings. It sprang from the love of God and of His Church. God breathed this breath of life. Here in this chapel, and in the chapel which many of you remember with some regret, that life has been maintained.

The life of the school must not be in three separate departments, with some boys known as the athletic boys, and some as the intellectual boys, and some as the religious boys. Some one said to me last summer that there is no surer test of the vigour of a school than when the boys who are highest in the school are also foremost in the games, and it is quite certain hat the whole character of games degenerates when they are in any way dissociated from the intellectual life; but there is a worse thing, and that is when the services of the chapel are felt to be foreign and separate, and without voice or meaning to the great flood of earnest activity which goes on outside these walls. Just as the fierce blast of a furnace penetrates the whole of the mass of iron and turns every particle of it into the finest steel, so should the breath which is breathed in this place penetrate into every corner of our common life and transform it and purify it and uplift it, and make it one, devoted heart and soul to the service of our King. For it is indeed the very breath of life whereby this college has become a living self.

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[1] From a sermon delivered to the boys at Radley College, by the present Warden, the Rev. T. Field, D.D.

ITEMS OF INTEREST.

GENERAL.

THE period of English History prescribed for the Cambridge Local Examination (Senior, Junior and Preliminary) next December (viz., 1509-1688), overlaps the later of the two periods prescribed for the Oxford Local Examination next July. We note this in order to direct the attention of our readers to the fact that the History Notes which commenced in our October issue, and the History Tests (1605-1715) which commence in our present issue, though primarily designed for the Oxford Local, will also be useful to teachers preparing classes for the Cambridge Local. Teachers who think of using our tests—which are designed for the Preliminary, but can of course be used for any grade—should send in applications at once, as the number printed is not unlimited.

THE great success which attended the Conference of Science Teachers, held during the Christmas vacation last year, has encouraged the London Technical Education Board to arrange another, which will be held on Wednesday, January 10th, and Thursday, January 11th, 1900, and there will be two meetings on each day, from 11 to 1 and 2 to 4. The meetings on the first day will be held at the conference room associated with the English Education Exhibition, and those on the second day at the Shoreditch Technical Institute, Pitfield Street, Hoxton. On Wednesday morning an address will be delivered by Professor L. C. Miall, F.R.S., of the Yorkshire College, Leeds, on the "Teaching of Botany in Schools," and by Miss Von Wyss, of the North London Collegiate School for Girls, on "Object Lessons in Botany." In the afternoon of the same day an address will be delivered by Professor H. E. Armstrong, Ph.D., F.R.S., on "Juvenile Research," with lantern slides and experiments by juvenile assistants. On Thursday morning addresses will be delivered by Professor Woods Hutchinson, M.D., on the "Teaching of Natural History in Schools," and by Mr. J. W. Tutt, headmaster of the Portman Place Board School, Globe Road, Stepney, E., on "Object Lessons in Natural History." At 2 o'clock of the same day Professor W. Ripper, M.I.M.E., of the Firth College, Sheffield, will lecture on "Metal Work as a Form of Manual Instruction in Schools," to be followed by a discussion, which will be opened by Mr. C. T. Millis, principal of the Borough Polytechnic. In connection with the conference, it is hoped to get together a small collection of specially designed apparatus used in schools for science teaching. The assistance of teachers who have designed such apparatus is specially desired, in order to make this section of the work of the conference as useful as possible. Free admissions will be granted to as many teachers as the conference rooms will accommodate. Applications for tickets of admission should be made to Dr. Kimmins, Bermondsey Settlement Lodge, S.E., or to Mr. C. A. Buckmaster, 16, Heathfield Road, Mill Hill Park, W.

A COURSE of twelve demonstrations in experimental psychology is to be given in the Psychological Laboratory of University College, London, during the Lent term of the session 1899-1900, by Mr. W. McDougall, M.A., M.B., M.Sc., Fellow of St. John's College, Cambridge. The class will meet once a week on the day and at the hour that are found most convenient to the majority of the students. Names should be sent in to Mr. McDougall, St. John's College, Cambridge, before Tuesday, January 16th, 1900, when the Term begins; and students should be present at the first meeting on Friday, January 19th, at 4.30. The fee for the course is £2 2s.

THE preparations for the English Education Exhibition, to be held at the Imperial Institute, on January 5th to 27th, 1900, are now almost complete. His Royal Highness the Prince of Wales has graciously consented to open the Exhibition on January 5th. The exhibition will be arranged in the following five main divisions:—(1) Education, as controlled by school boards and boards of managers of public elementary schools, together with training colleges for teachers in primary schools: (2) secondary education, including (*a*) boys' preparatory schools, (*b*) private schools, girls and boys, (*c*) endowed and proprietary schools for girls, (*d*) endowed, proprietary, grammar and public schools for boys, (*e*) secondary training colleges; (3) technical education, with schools of art; (4) university and higher education; (5) educational institutions and other bodies not falling under any of the above heads.

THE exhibits are intended to represent the education of the present day, and also to illustrate the history and traditions of education. One great feature of the exhibition will be the number of specimens of the work of pupils and students in art and in manual and artistic crafts, and also in ordinary literary training. Under the latter head will be comprised sets of ordinary exercises and note books and also examination papers, illustrative of the actual work done in the different schools and colleges represented. The exhibition will also include a number of portraits and busts of great historical and artistic interest, representing many of the great men and women who have been identified with educational progress, and also a number of antiquarian treasures from the great public schools. Among other memorials of peculiar interest may be mentioned the original moral philosophy papers shown up by Mr. Gladstone in the schools at Oxford.

THE expert who desires to test and compare the work of our schools of every grade and type will have the fullest materials on which to work, and the ordinary citizen, to whom a school note-book is anything but attractive, will be able to gratify his artistic interests, to glean some trifles of historical knowledge, and even to satisfy his curiosity by the spectacle of an educational cinematograph. Arrangements are being made by many educational bodies for holding a series of meetings, conferences and lectures on educational subjects at the Imperial Institute during the period of the exhibition. One section of the exhibition will be devoted to the display of the works of educational publishers and commercial firms connected with education. Mr. J. Fischer Williams, 7, New Square, Lincoln's Inn, London, W.C., is Secretary to the Organising Committee.

THE pressing question of the security of tenure of office of assistants in secondary schools, which has occupied the attention of the Assistant Masters' Association since its formation, has been again brought before the notice of the public by the occurrences at Alleyn's School, Dulwich, S.E. During the first term of 1899 the whole body of assistant masters applied to the governors of the school for an increase in their salaries, with the result that a scheme for a certain increase was adopted. This new arrangement, however, was not satisfactory to the assistant masters, and a second memorial was forwarded to the governors, who found themselves unable to reopen the question. On November 29th three of the assistants received a month's notice from the headmaster without any reason being assigned. Two of the three dismissed assistants, who are members of the National Union of Teachers, have brought their case before the executive of that union, who have taken up the matter. Future developments will be awaited with great interest by every assistant master in secondary schools.

THE Civil Service Commissioners have announced that on February 6th, 1900, and following days, a competitive examination will be held in London, Edinburgh, Dublin, Bedford, Birmingham, Bristol, Leeds, Liverpool, Manchester, Newcastle-on-Tyne, Plymouth, Aberdeen, Glasgow, Belfast and Cork, at which examination 80 candidates will be selected for clerkships of the Second Division of the Civil Service. Applications to attend the examination must be made on forms which can be obtained from, and must be returned to the Secretary, Civil Service Commission, S.W., on or before January 19th, 1900. The limits of age are 17 and 20 Candidates must be of the prescribed age on the first day of the examination. The examination will be in the following subjects:—Handwriting, orthography, arithmetic, copying MS. (to test accuracy), English composition, geography, indexing or docketing, digesting returns into summaries, English history, and book-keeping. The salaries of clerks in the Second Division, for a daily attendance of *not less than* seven hours, commence at seventy pounds per annum, and rise by annual increments as follows, viz.:—From seventy pounds to one hundred pounds by annual increments of five pounds; from one hundred pounds to one hundred and ninety pounds by annual increments of seven pounds ten shillings; and from one hundred and ninety pounds to two hundred and fifty pounds, by annual increments of ten pounds. There is a higher grade of the Second Division with salaries commencing at two hundred and fifty pounds per annum, and rising by annual increments of ten pounds to three hundred and fifty pounds. The fee for attending the examination is £2.

TEACHERS will do well to note that the above examination is the last that will take place under the existing set of regulations. As was stated in a former issue, in any examination for clerkships in the Second Division of the Civil Service, after June 30th, 1900, the subjects of examination will be as follows, viz.: Handwriting and orthography, including copying manuscript; arithmetic; English composition; and not more than four of the following:—(*a*) Precis (including indexing and digest of returns); (*b*) book-keeping and shorthand writing; (*c*) geography and English history: (*d*) Latin, or French, or German (translation from and into the language); (*e*) elementary mathematics, viz., Euclid, Books I.-IV., and algebra up to and including the binomial theorem; (*f*) inorganic chemistry, with elements of physics. Apart from other obvious advantages of the new syllabus, the introduction of the last three ordinary form subjects will do away with a good deal of that irritating interference with the continuity of form work caused by the current belief that these subjects are not of any particular use in an official or commercial career, which has led to boys being excused certain lessons in Latin and other subjects.

THE Committee of the Ipswich Science, Art, and Technical Schools and the School Board for the County Borough of Ipswich have, as the outcome of a series of conferences between the two authorities, mutually agreed to the following general principles:—(*a*) That, as a general principle, from which a departure shall not be made except by mutual agreement, any subject or schemes of study for which one authority can obtain a grant and the other cannot, shall be taken by the authority by which such grant can be obtained; (*b*) that subjects or schemes of study for which both authorities can obtain a grant shall be taken by the Committee; (*c*) that subjects or schemes of study for which neither authority can obtain a grant shall be dealt with according to mutual agreement.

WITH reference to future operations the conditions agreed upon are:—(*a*) That subjects or schemes of study for which a grant cannot be obtained by either authority shall not be commenced by either without due notice from one to the other; (*b*) that any material changes in the Directory of the Science and Art Department or in the Evening Continuation Schools Code of the Education Department shall be made the subject of consultation between the two authorities, and this arrangement may from time to time be revised by mutual agreement; (*c*) that this arrangement shall be accepted as binding on both authorities, but may be terminated by three months' notice in writing from one authority to the other.

THE School Examination Syndicate of the University of Cambridge report that in the year ending October 31st, 1899, examinations or inspections were held under the authority of the Board at 94 boys' schools as compared with 101 in the previous year. Eight schools have been examined this year which were not examined last year, while fifteen examined in the previous year have not been examined this year. Examinations or inspections were also held at eighty girls' schools, thirty-two of which are schools of the Girls' Public Day School Company, Limited The number of girls' schools examined last year was eighty-two.

AN influential committee has lately been formed for the purpose of promoting the establishment of a British school at Rome on lines more or less similar to those of the school which was established some years ago at Athens. The work to be done by a British school at Rome would in many respects be similar to that at present done by the school at Athens. The school would be a training ground for students fresh from the Universities or other institutions, who would receive there the help and guidance which are perhaps more needed in Rome, with its complex history and varied interests, than anywhere else. It would serve as a centre round which more mature students would naturally group themselves. Such a recognised centre would not only stimulate intercourse and sympathy between workers who are now isolated, but would, as the experience of the older schools in Rome has shown, make more concerted and continuous work possible. The school would also, it may be hoped, prove of assistance to British visitors anxious for information and advice in the study of the perplexing confusion of monuments with which the traveller is confronted in Rome.

TAKING all these needs into consideration, it is estimated that the smallest sum which would be required to establish and to maintain the school in any degree of efficiency would be for initial outlay £3,000, and for income £1,000 a year. It is proposed to issue in the spring of this year an appeal for the schools of Rome and Athens jointly, and all persons interested in promoting the study of art, archæology, and history, medieval as well as classical, are earnestly invited to co-operate in making that appeal effective. In the meantime, subscriptions and donations in aid of either school, and promises of support, will be gratefully received and acknowledged by the hon. treasurer of the British School at Athens, Mr. Walter Leaf, 6, Sussex Place, Regent's Park, N.W.

WE are glad the Holiday Courses Committee of the Teachers' Guild are able to state that the courses at Lisieux and Tours in 1899 have been thoroughly successful. The course at Lisieux, which town was visited for the first time, in place of Caen, this year, was very largely attended, the number of students being 102, or 38 more than were at Caen in 1898. The Tours course was attended by 26 members, being four more than in 1898. The time-table and terminal examination—which were introduced as new features at Lisieux—have been found to be valuable adjuncts to the work of the course.

IT has been decided to repeat the courses at Lisieux and Tours in August, 1900. The courses will be of the same duration as in 1899, viz., at Lisieux, twenty consecutive week-days, omitting French general holidays; and at Tours, three weeks, with an extension to four weeks, if desired. It has been arranged to open a third course of twenty days in 1900, at Elbeuf (on the Seine, near Rouen), where the Committee will have the advantage of the presence of M. Léon, late Secretary of the French Committee at Lisieux, as local organiser. The representatives of the English committee for the courses in 1900 will be:—At Lisieux, Mr. E. Buck, St. Edmund's School, Canterbury; at Tours, Mr. S. de Ste. Croix, St. Edmund's School, Canterbury; and at Elbeuf, Mr. E. W. Hensman, Headmaster of the Rawlins School, Quorn, Loughborough.

THE report of the London Society for the Extension of University Teaching gives evidence of a very good year's work. The following table shows the number of courses, students, and certificates awarded during the sessions 1897-98 and 1898-99.

	No. of Courses.	Entries of Students.	Certificates awarded
1897-98	160	13,155	1,756
1898-99	166	12,429	2,184

The number of certificates awarded was considerably in advance of that of any previous session, and the proportion of those attending the lectures who obtained certificates reached 17·6 per cent., as against 14·1 per cent. in the session 1897-98, and 12·7 in the session 1896-97. Another very satisfactory point in connection with the session's work was the increase in the number of courses of lectures arranged in sequence:—

	Courses in sequence during two Terms.	Courses in sequence during three Terms.
In 1896-97	40	36
,, 1897-98	41	36
,, 1898-99	17	41

As a consequence of this, a much larger number of students were enabled to obtain the sessional certificates of the Society, thus:—

Number of sessional certificates awarded,	1896-97	277
,, ,, ,, ,,	1897-98	301
,, ,, ,, ,,	1898-99	543

THE annual general meeting of the Incorporated Association of Headmasters will be held at the Guildhall, London, E.C., on Wednesday and Thursday, January 10th and 11th, 1900. During the meetings the following subjects will be discussed:—(*a*) The Formation of Local Authorities for Secondary Education; (*b*) Commercial Education; (*c*) The Training of Teachers for Secondary Schools; and (*d*) Inspection of Secondary Schools. We understand that the authorities of the English Education Exhibition at the Imperial Institute have set apart the afternoons of Monday and Tuesday, January 8th and 9th, for papers read by members of this association.

THERE are satisfactory indications that no diminution in the new-born zeal for education throughout the country is likely for some time yet. Everybody has been impressed by the enthusiastic local support which the Midland University scheme has met with in and around Birmingham. And now the inhabitants of that part of North Staffordshire known as "the Potteries" are bestirring themselves to found a University College at Hanley. A committee appointed last June to make investigations has presented a report dealing with a variety of plans for making their laudable desire assume the form of actual reality. The promoters of the movement are looking round for some generous donor to provide, say £10,000, on condition that a similar amount is raised in the district. There should be no trouble in finding such a patron; in America the amount required would be considered quite a minor donation.

THE Standards Department of the Board of Trade has in course of preparation, for the purpose of explaining the principles of the metric system in schools, a set of educational models of metric weights, measures, and weighing and measuring instruments, similar to those used in trade. It is to be hoped that their appearance will not be long delayed, and that the collection of models will be produced at a reasonable cost.

AT the beginning of 1899 Mr. Stopford Brooke delivered a course of evening lectures on the poetry of Robert Browning, at University College, London, by invitation of the council. The lectures were attended by upwards of 350 persons, and were received with such great enthusiasm that a movement was at once set on foot among the members of the audience, with the view of making provision for the regular delivery of such a course, and also of thus paying a public tribute to Mr. Stopford Brooke.

HAVING obtained Mr. Brooke's consent to undertake the lectureship, and having learnt that it would be pleasing to him for the lectures to be given and arranged under the auspices of the college, a provisional general committee and a small executive committee have now been formed for the purpose of carrying out the scheme. It is the earnest wish of the committee that a sum may be raised of at least £10,000, so that it may be sufficient to endow in perpetuity a lectureship or professorship of literature or poetry (the title of the office has yet to be fixed), to be called by Mr. Brooke's name, to be held by him so long as he is willing, and afterwards, subject to the appointment of the trustees of the fund, by men who will carry on similar work. Donations of any amount, or subscriptions for three years, will be gladly received by the Honorary Treasurer, Mr. J. Foster Howe, Holwood, Grove Park, Lee, S. E.

THE Cambridge Local Examinations commenced on Monday, December 11th., at 263 centres of the United Kingdom and the Colonies. The total number of candidates (16,023) was larger than that of any previous year, a small decrease in the number of those entered for the Junior Examination being more than counterbalanced by increases in the Senior and Preliminary Examinations. The entries were distributed among the various Examinations as follows:—Seniors 2,247, Juniors 8,275, Preliminary 5,501. 9,635 of the candidates are boys, and 6,388 girls. The numbers given above included 1,259 candidates at centres not in the United Kingdom. The Higher Local Examinations (211 candidates) were held contemporaneously at certain home centres.

THE following is an analysis of the entries for certain subjects in the Junior Examination, which is mainly designed for students between fourteen and sixteen years of age. All candidates must take up arithmetic and dictation. The following subjects are selected by at least ninety per cent. of the candidates:—Religious knowledge, English grammar (including composition), English history, geography and French. The English author was taken up by nearly eighty per cent.; and here it is noticeable that of the alternatives Shakespeare's Richard II. was selected by five times as many candidates as Macaulay's Lay. More than seventy-four per cent. entered for Euclid and Algebra, forty-one per cent. for Latin, nearly ten per cent. for German, and three and a half per cent. for Greek. About forty-two per cent. selected one or more of the nine distinct subjects in Natural Science, and there was an increase this year in the entries for theoretical and practical chemistry, heat and physiology. For drawing over fifty-five per cent. of the candidates entered, for music eleven per cent., for book-keeping eight per cent., for shorthand nearly four per cent. The percentages of candidates in the various subjects in the Senior Examination agree in the main with the above, except that the proportion of candidates taking up classics and mathematics is smaller. This difference may be largely accounted for by the fact that the girls, who are less than thirty-five per cent. of the Junior candidates, constitute more than sixty per cent. of the Senior candidates.

THE regulations for 1900 can be obtained from DR. KEYNES, Syndicate Buildings, Cambridge, or from the local secretaries at the various centres of examination. Among other alterations a schedule for physical geography has been drawn up, with the view of encouraging the observational and experimental teaching of the subject. The requirements for a Junior certificate have been somewhat increased, but, on the other hand, the regulations have been revised, so as to give the candidates for the various examinations greater freedom in the selection of subjects.

AT the closing meeting of the winter session of the General Medical Council the report embodying the recommendation of the Education Committee on the question of raising the *minimum* requirements of the Council as regards preliminary examinations was set aside in favour of the resolution :—"That the Education Committee be requested to obtain from the experts a report setting out in full their reasons for the conclusion that they have arrived at with regard to the adoption by the council of the senior and higher grade standard of preliminary examination, and that a sum of £100 be placed at the disposal of the committee." In the unanimous report, which was not adopted, the experts appointed to consider the question expressed the opinion that the standard of the medical preliminary examination must depend upon the general standard of the secondary education of each country in which the examination is held, and a standard too high for one might be found too low for another.

IN reply to a letter received from Mr. J. A. Crawley, Parmiter's Foundation School, London, to ask if "is it not a fact that John did *not* sign Magna Carta?" Mr. A. Johnson Evans writes: "I regret that I fell, when writing my article on King John, into the popular error of making him sign the Charter. And I therefore take this opportunity of communicating a few notes from Richard Thomson's 'Historical Essay on the Magna Carta of King John,' &c. (London, 1829): 'The popular but erroneous notion that the preceding Charters, and especially that of King John, were signed by the Sovereign who granted them . . . There is no appearance of either name or signature . . . *Data per manum nostram* . . . properly signify that the instrument was given *by* the King's hand, as a confirmation of his own act . . . Regal charters of the Anglo-Saxons . . . were commonly . . . attested by the crosses or ignatures of the Kings . . . After the Norman Conquest they were confirmed by an impression of a seal. . . . The custom of igning had almost entirely disappeared . . . until the time of Richard II. . . . It was a common-law maxim . . . that sealing was of itself sufficient to authenticate a deed; though it was also essential that it should be delivered before witnesses. Whence the expression in Magna Carta already referred to.'"

LADY RAYLEIGH contributes to the December number of *The National Review* an article on "The Pupil Teacher in Rural Schools," in which she criticises the recommendations of the recent Departmental Committee appointed by the Education Department to enquire into the Pupil Teacher System in England and Wales. Lady Rayleigh thinks "pupil teachers should be differentiated into two grades. The present regulations would remain in force for the upper grade, while fresh ones must be formulated for the lower, leading on to a simple certificate examination in elementary knowledge, skill in teaching, and (for girls) in kindergarten methods." The article deserves careful consideration, giving as it does the opinions of one who has actual contemporary experience in the conduct of village schools.

IT is interesting to note from the lists published by the Central Board for Wales that much encouragement is given to the teaching of modern languages by the "newer" or conversational methods. No candidate for either the Senior or Junior Leaving Certificate is allowed to pass in a modern language unless he can read well and satisfy the examiners in a piece of dictation. Candidates who obtain distinction can also be examined as to their ability to converse, and, if successful, will have a note to that effect entered upon their certificates. It appears that of the senior candidates 17 satisfied the examiners in conversational French and 1 in German. Of these, 13 came from the Carnarvonshire schools. Of the junior candidates 6 only satisfied the examiners. Now that Professor Rippmann's book has been so widely adopted the number of the juniors will, no doubt, soon increase. Still, out of the 282 successful candidates among the seniors, 18 is but a very small percentage, and it is to be hoped a great improvement will be shown next year. There should, however, be more uniformity in the standard demanded by each examiner.

OWING to the necessity of going to press earlier this month because of the Christmas holiday, the results of the English Essay and Chess Competitions, announced in our last issue, have had to be held over until the February number.

ERRATA. Two corrections made by Mr. Milner-Barry upon the final proof of his article on "The Position and Teaching of German" were misprinted in the December number. On p. 445, col. 2, line 13, "hiezen" should be "hiessen," and in the same page and column, line 30, "Zrinnern" should be "erinnern."

FOREIGN.

ONE of the most recent, and by no means the least remarkable, development in educational methods is the growth of what is called pedagogic hypnotism. Mr. Arthur Macdonald, specialist to the United States Bureau of Education, has sent us a reprint of a paper on this subject which he recently contributed to the *Medical Progress*, of Louisville, Ky. One of the chief workers in this new department of study is Dr. Berillon, of Paris, who has accomplished by the aid of hypnotic suggestion "the cure of cases of kleptomania, lying, biting of the finger nails, cowardice, fear of the dark, &c." There are, it is maintained, the elements of a true experimental pedagogy in hypnotism, and it is said to be possible by this means to modify the ideas of children, change their characters, correct acquired habits and form new ones. If all these things bear the test of enlarged experience and future experiments, there should be a good time in store for the teacher.

THE value of research or "heuristic" methods in teaching is being more and more recognised. Owing to the efforts of Professor Armstrong and others, very few teachers of science in this country are now ignorant of the advantages of setting children to discover for themselves rather than overwhelming them with showers of clearly expressed facts to remember. It is interesting to know that Professor Macgregor, in opening the current session at the Dalhousie College, Halifax, Nova Scotia, took for the subject of his address "The Utility of Knowledge-making as a means of Liberal Training," in which he advocated the same system. We find, on reading the copy of his address which Professor Macgregor has sent us, that he attributes a considerable part of the failure of ordinary educational methods to what he calls "the false and vicious generalisation" of Bacon, viz., "Knowledge is power." The power to make knowledge—to discover facts for oneself—is the really great power, and, in fact, the only one which is much used in later life.

IT appears from the recently published *Annuaire statistique de la Belgique* for the year 1898 that there has been a constant decrease since 1890 in the number of students at the four universities of Belgium. In 1890 the total number of students was 6,188; in 1898 it had fallen to 4,951. In 1890 there were 102 university students for every 100,000 of the population; in 1898 the corresponding number was 75. The percentage decreases from 1890 to 1898 in the four principal subjects were as follows:—Philosophy and Literature, 38; Sciences, 52; Law, 81; and Medicine, 21. In only one branch of study was there an increase, viz., an increase of 27 per cent. in the number of students at the special schools which each university has attached to it for the study of the technicological arts and sciences.

A CORRESPONDENT of the *Australasian Schoolmaster* gives the following method for making lantern slides from ordinary book-illustrations:—"Paste the picture with boiled starch to the glass, of ordinary size, viz., 3¼in. by 3¼in. When dry take a piece of finest sandpaper, place round a cork and rub very gently till all the paper is removed, and the thin film of the picture remains on the glass. To make it transparent, take Canada balsam and spirits of turpentine mixed in equal parts, and apply lightly with a fine brush. When dry they give results almost equal to bought slides as regards clearness on the screen." The principle of the method is not original, being, in fact, the basis of the "crystoleum" method of mounting photographs on glass. Teachers who think of trying the plan will probably find dilute gelatine better than starch, and paraffin-wax easier to obtain than Canada balsam, and it does equally well for making the picture transparent. The method suggested by the letter referred to might be further improved by first colouring the book illustration.

AT the recent meeting of the Mysore Representative Assembly the address of the senior councillor showed that the total number of educational institutions in the State, both public and private, was 3,781, with 89,507 boys and 13,674 girls under instruction. The percentage of boys to the male population of the school-going age was 24·52, and that of girls to the female population of the school-going age 3·78. These percentages show a considerable fall in the strength of schools of all classes in consequence of the prevalence of the plague in four districts of the State.

A CONFERENCE was held at Simla, during the last week of October, with the view of putting into practical shape Mr. Tata's proposals for the foundation of an Indian Research Institute. It was attended not only by Mr. Tata and his representatives, but by the Directors of Public Instruction in Bombay, Madras, Bengal, and the Punjab. Lord Curzon presided. It is probable that the department of technology, physical science and medicine will be first inaugurated, and that the question of the training of secondary teachers will be dealt with later. The *Pioneer Mail* announces that the Government of India have given their cordial approval to the Tata scheme, and as soon as all the details have been worked out, the necessary legislation for the incorporation of the new University will be undertaken.

THE Board of Education of Sierra Leone are offering a prize of £20 to the writer of a small history of Sierra Leone. Particulars may be obtained from the Board of Education, Freetown, Sierra Leone.

CURRENT HISTORY.

THE Samoan difficulty is ended in the inevitable way. To the "Christian" Powers of Europe, we *know* (who dares to doubt it?) that the earth has been given for an inheritance; and the three of them who were interested in this particular "lot" have divided the spoil. Great Britain has some of it, but the briefest statement of the "consideration" for her abstinence leads to reflections on the size of the British Empire and the magnitude of her interests. Some of our great shipping and other firms effect no insurance, or rather, carry on their own insurance business, because "their ships insure one another." So Great Britain can afford to lose a considerable asset, because her dominion is so extended, and her desires necessarily, therefore, so large, that she can easily receive compensation elsewhere. Samoa was not our "one ewe lamb."

CAMBRIDGE University is discussing the Mathematical Tripos with a view to certain alterations. Possibly the result of some of these will be, if carried out, to "abolish the Senior Wrangler." That would be the change most interesting to the general public, because the newspaper reader's idea of the University is that it has a Senior Wrangler and a Boat Race. Not long ago we had a further illustration of how the public can misunderstand a matter in the great question of Women's Degrees. But the result of the proposed changes which will most interest the undergraduate will be the possible abolition of the "Wooden Spoon." If candidates are not to be arranged according to merit, but named alphabetically in divisions, there must either be *no* Spoon or a dozen of them. *Sic transit gloria mundi.*

THE trouble in Austria-Hungary still continues. The Government has now taken the side of the "Germans," and other languages have ceased to be recognised in the army. Soldiers have been punished for not saying "*Hier*" when their names are called. But the conversions to Protestantism continue, and what will be the end thereof we cannot yet see. People say that it is only the aged Emperor that keeps the empire together. Certainly he is apparently the only one who can keep the peace between the warring nationalities. This language question is not peculiar to Austria-Hungary; it forms part of our quarrel with the Boers, and is a standing difficulty in Belgium. Yet from the United States we hear that the second generation of immigrants from all countries can speak American-English well, and the third generation is generally absorbed into the prevailing population.

THE BRITISH EMPIRE.

MESSRS. PHILIP have just published a wall map[1] of the British Empire, which has the advantage of being on a uniform scale. It is impossible, in these days of international changes, to be quite up to date, and the Venezuelan award and the recent Anglo-German agreement are not recognised in this publication; but the map would make an excellent addition to the schoolroom, and will prove of great value to teachers of history as well as geography.

The British Empire, in human history, is in some measure analogous to those phenomena of nature of which it is as customary as true to say that only their familiarity hides their almost miraculous, transcendent wonderfulness. It is so vast, and yet so near to us, so incomprehensible, and yet so habitually handled that, like the powers of electricity, we forget its immensity both in actual existence and in potentiality, because we find ourselves constantly able to use and control it. We do not, because we cannot as yet, explain it; we do but make it serve our every-day wants. "Practical" men—that is, the men who think they can act without knowing the principles of their actions and who, therefore, make at least as many failures as successes, are content to go on using Pegasus to plough their fields, careless and indifferent as to the why and wherefore of his existence. Those of us who are engaged in more scholastic (which, being literally interpreted, means leisured) pursuits can afford to make patient inquiry in order that our pupils may be wiser than their fathers, and make at least a beginning of understanding the Empire of which they form a part.

Therefore it is that we welcome such a book as Mr. Woodward's,[2] which helps us on towards an exposition of the nature and evolution of this mighty whole. We propose, therefore, with his help, to speak briefly of some points suggested by his book. The story begins in the "spacious days of Queen Elizabeth" with the daring deeds of her sailors, Hawkins, Frobisher and others, and especially with Drake and his circumnavigation of the globe. It is still a disputed point whether these attacks on Spanish property and territory were "piracy," even from the modern point of view. Mr. Woodward gives good reasons for regarding them as justifiable acts of war.

With the accession of the Stuarts the period of colonisation began, a movement which may be regarded as "inevitable" (p. 10), like the colonisation of the Greek race. Its inevitableness may be both illustrated and proved, if not also partly accounted for, by its utter unconsciousness. We are familiar with Prof. Seeley's epigram, that "we conquered the world in a fit of absence of mind," and now we learn from Mr. Woodward (p. 65) that a solitary M.P., on whom the vision of empire dawned, in 1614, was rebuked by the Speaker of that day for thinking that Virginia was more important than parliamentary squabbles at home. But this "Abdiel" had sympathisers; the Pilgrim Fathers alleged, as one of their reasons for going to America, the desire to do something for the growth of their country, and Oliver Cromwell, as we all know now, was a "founder" of our Colonial Empire.

Oliver's statesmanlike view of empire was one of the things that survived the Restoration, and for another generation the American colonies were treated as part of ourselves; even the Navigation Acts were framed in the interests of a wide Imperialism, not merely of the mother country. But when the Revolution made Parliament an annual necessity, these new statutes began to be interpreted in the sense that satisfied the short-sighted greed of the manufacturers who were represented in the House of Commons, and that policy began which ended in the disaster of 1776-83. As Mr. Woodward says (pp. 135-6), "As by degrees statesmen ignored the colonies, the business man's view governed English policy . . . . The mercantile interest through the House of Commons at once acquired the chief voice in colonial policy."

There are one or two small misprints, and we think the difference between the religious parties in England is not fully grasped, but these are outside the author's main business. We would rather close with the heartiest commendation of the book to our readers. It is full of wisdom, applicable to our own day; *e.g.*, the following passages *apropos* of the Amboyna massacre of 1623 (p. 71): "Ignorance of the true situation on the spot, contempt for expert knowledge, the desire to be rid on any terms of one difficulty because attention is demanded by another; lastly, a tendency to cling to a principle once sound, but already rendered obsolete by facts; English colonial policy has many instances to show of failures of this type, of which that of James I. in his dealings with Holland is the earliest example."

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[1] The British Empire, on a uniform scale of 1:7,800,000 (5 ft. 7 in. × 4 ft. 5 in.) (Geo. Philip & Sons.) 14s.

[2] A Short History of the Expansion of the British Empire, 1500-1870. By W. H. Woodward. x. + 326 pp. (Camb. Univ. Press.) 4s.

PRACTICAL GEOGRAPHY.[1]

THERE are signs that geography is beginning to share in the movement which has entirely changed the character of the instruction in other sciences during the past few years. Most educationists now agree in condemning didactic methods of science teaching, and in supporting systems of instruction drawn up with the view to cultivate the habit of thinking rather than the faculty of absorbing information imparted by others. Rational methods of instruction in the physical and natural sciences are thus being widely adopted in schools where it has been found possible to provide the necessary accommodation and equipment. Some subjects admit of experimental demonstration much more readily than others, which accounts for the remarkable developments that have taken place in recent years in the teaching of practical physics and chemistry. On the other hand, it requires much consideration to make geography a subject of individual observation. Any teacher is supposed to be competent to teach it, but unless he is familiar with the science in its broadest aspects, his lessons must be merely the reflection of the text-book he happens to use. This does not matter if the text-book is constructed on sound principles, but unfortunately, books are still in use in which geography is not presented as a science capable of being studied everywhere, but as a dismal collection of statistics, boundaries, and other disconnected details which no pupil ought to be asked to remember.

Though most text-books of geography used in schools are bad, a number of good books are available, and the future will doubtless bring others in which the subject is dealt with rationally. The character of a text-book is largely determined by the character of the examination for which it is primarily intended, and so long as examiners set questions which need memory rather than thought for the answering, so long will text-books provide geographical pemmican. Much improvement may, however, be noticed in the character of the questions in several public examinations in recent years, and it is becoming more and more possible to make geography a living subject instead of a collection of "dry bones," even though pupils are being prepared for examination. This being so, it seems worth while to give examples of lessons in practical geography, from some volumes, recently published, dealing with reformed methods of geographical teaching. It is not proposed to review the books in any detail, but rather to illustrate by typical lessons the methods of teaching advocated by many educationists, and proved to be practical by teachers.

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[1] "The Teaching of Geography in Switzerland and North Italy." By Joan Berenice Reynolds, B.A. 112 pp. (Cambridge University Press.) 1s. 6d.

"Teachers' Manuals of Object Lessons in Elementary Science and Geography Combined." By Vincent T. Murché. Vol. I., 194 pp.; Vol. II., 187 pp.; Vol. III., 201 pp. (Macmillan.) 1s. 6d. each.

"Sand-Modelling for Primary and Secondary Schools." By Miss Tarbuck, L.L.A., and H. Major. B.A., B.Sc. 135 pp. (O. Newmann & Co.) 7s. 6d.

Miss Reynolds's book contains her report, presented to the Court of the University of Wales, on a visit to Switzerland and North Italy in 1898, as Gilchrist Travelling Scholar. Many helpful descriptions on the methods by which geography is taught in the primary and secondary schools in those countries can be found in the volume. The most striking characteristic of the instruction in primary schools in Switzerland is the universal adoption of the "Heimatkunde" method. The following extract shows the kind of instruction given in secondary or advanced schools:—

> I was present at a lesson given in a secondary school at Zurich to a class of 35 boys, average age 14. Each boy possessed Wettstein's atlas, which was opened at the specimens of cartography given in the introduction. Attention was called to Figure 7, which represents a topographical map of a small district, with the relief shown by contour lines at distances of ten metres. By means of these lines the master got the boys to calculate the height at various points, and also to describe in detail what the views would be like from an imaginary house situated on the slope of one of the hills delineated on the map. The different methods for representing canals, brooks, rivers, field-paths, cart-roads, highways, &c., respectively, were described by the boys and illustrated on the blackboard, and close examination of their maps rendered it possible for them to tell where the rock had been artificially cut out to form a road, and where it had been naturally worn away by a river into a gorge. Then profiles of parts were drawn, and a section of a supposed cutting necessary for the construction of a railroad across the district. Finally, the master showed a real relief, which had been made from the map by another boy in the school by means of cutting out and fixing one upon another separate pieces of cardboard. He invited the boys to make similar relief of whatever districts they preferred, offering to provide them with the necessary maps and apparatus.

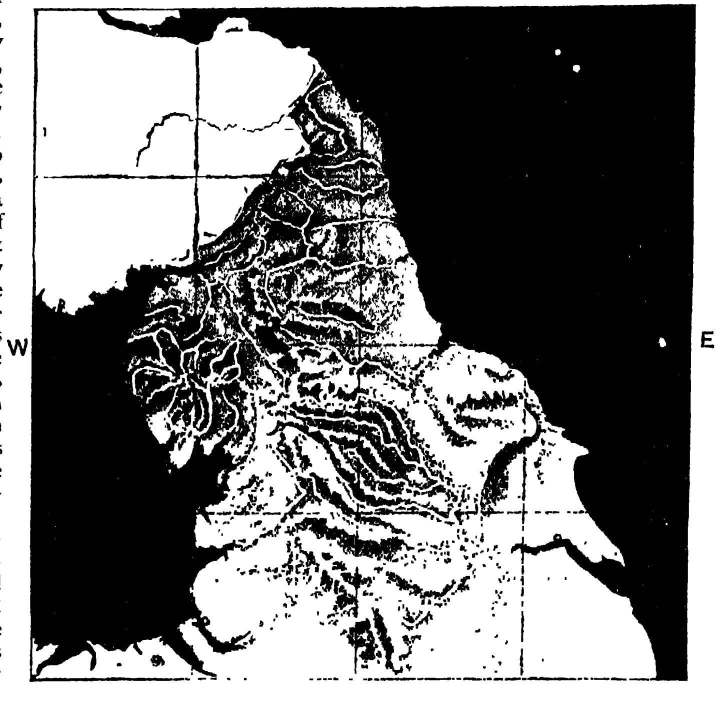

FIG. 1.

Compare this lesson with what passes for a lesson in geography in most of our own secondary schools, in a class of boys having an average age of 14, and no impartial critic will hesitate to decide that we are much behind in the scientific study of the subject. Unless geography is taught as a science it is barely worth while to include it in the curriculum of a school. Miss Reynolds's book should help to stimulate that interest in the subject which is necessary to lift it out of its present unsatisfactory position.

Mr. Murché's books are primarily intended for the use of teachers in public elementary schools who give instruction in the combined subject of "Elementary Science and Geography" introduced into the Code of Regulations for Day Schools under the Education Department in 1898. The subject is divided into seven stages corresponding to the seven standards in elementary schools, and in each stage the aim is to train the pupil's faculties of observation and description of natural objects and phenomena rather than to dull their intellects with geographical details. The Education Department, through H.M. Inspectors, have wisely determined to discourage "the senseless repetition of lists of names and meaningless definitions, and in its place to foster the cultivation of intelligent teaching by the natural process of observation."

The new subject closely approaches the "Home-Knowledge" method, used with such great success in primary schools in Germany and Switzerland. The syllabus of the first three stages, which are covered by Mr. Murché's books, is as follows:—

> Annual courses of object lessons, of which elementary geography should form a part, beginning with the simplest phenomena which the children can observe:—land, water, the form of the earth, the sea, hills, valleys, rivers, proceeding to the notions of locality and distance, and the means of representing all of these by modelling in sand or other material, and by a map, with special reference to the map of England. Object lessons on the chief tribes of animals and their habits, on common plants and their growth, and on common inorganic substances and their properties.

The same combination of geography with the sciences of zoology, botany and geology, and processes of manufacture is followed in the higher stages. At first glance, the subject presents the appearance of an *omnium gatherum* of disconnected information, having somewhat the character of the "Child's Guide to Knowledge," with which pupils of a past generation were tormented. But it must be remembered that children like variety, and that in early stages of instruction systematic methods are undesirable.

As an example of the contents of Mr. Murché's manuals, the following notes on the North of England, from the teachers' book for Standard III., are given, together with the map (Fig. 1) which accompanies it:—

> The modelling tray will be required, and in preparation for the lesson the teacher should make a model map on it in damp sand, in accordance with the plan here given. The principal mountain peaks and headlands would stand out best from the remainder of the model, if they were moulded in clay; the rivers would show up well in silver cords; the lakes in the Lake District should be represented by means of small pieces of looking-glass, and small, round, bone discs or buttons should be used to represent the towns. A sketch map should also be drawn in chalk, side by side with the model, on the part of the tray which is provided for that purpose, and a physical map of England will also be required. Provide a foot rule for mea-

surement purposes, and let the scale (six inches to fifty miles) be prominently shown on both the model and the sketch map. Uncover the model and commence with a few minutes' chat about it, in order to awaken the interest of the children. Be careful to give no hint for the present as to its being a model of any part of England, for the main object just now is to use it simply as a connecting link between what has already been taught and the lessons that are to follow. A little rapid questioning will elicit all they can tell about the model, and after leaving them in this way to point out examples of capes, bays, mountains and hills, rivers, estuaries, towns, and so forth, proceed as follows.

For all the stages covered by the teachers' manuals corresponding reading-books for the pupils are being prepared. The reader for Standard I. has already been published. Teachers who are in the fortunate position of being permitted to teach geography according to any plan they may care to adopt, are advised to examine Mr. Murché's volumes.

The book on "Sand-Modelling," by Miss Tarbuck and Mr. Major, is described in the sub-title as "designed to assist the teaching of drawing, object lessons and geography, copiously illustrated by blackboard sketches and diagrams, maps and photographs, with practical hints and instructions." The volume is a teachers' book, and contains detailed instructions for sand-modelling which should be of particular service in kindergarten schools. It represents the results of experience in methods of teaching which have been followed with great success for several years in Leicester, and though many teachers would not care to adopt the whole scheme of work, they will find in the volume numerous helpful hints. The notes of a revision lesson on a river, reprinted in the adjoining column, illustrate the method of instruction described in detail in the pages of the book.

The chief objection to sand-modelling and the construction of relief maps is that it frequently gives children incorrect ideas as to actual topographical conditions and modes of origin of various land-forms. The method must therefore be used with discretion. But notwithstanding the difficulties, there can be no question that in the early stages of geographical instruction visible illustrations and actual models in sand, clay, or other plastic material, such, for instance, as Harbutt's "Plasticine," should be used whenever possible. It is far better that a child should know what an island is, or an isthmus, or a strait, cape or creek, when he sees them, than it is for him to learn to recite definitions of them; and the very best way to convey an idea of these structures is to present them in a concrete form.

It would be possible to point out parts in Mr. Murché's books, and in the volume by Miss Tarbuck and Mr. Major, in which the demonstrations used are liable to lead to incorrect inferences. For instance, in the adjacent notes of a lesson on a river, the perforation of the sand with vertical holes made by a pen-handle must certainly lead many children to think that there are a number of similar vertical holes in every hill, and that the rain runs down them as it does in the rain-pipe at the side of a house. To illustrate in this way the percolation of water through the soil and the production of springs is decidedly misleading. Worse than this is the false impression of a volcanic eruption given by burning petroleum or spirit in a thimble pressed into the top of a sand-mountain. Curiously enough, the information about volcanoes given by Mr. Murché is incorrect in several respects, for every student of elementary physiography knows that the statement that "a volcano is a burning mountain, which throws out smoke, flames, ashes, cinders and lava," is untrue in almost every word. Defects of this character are, however, soon remedied, and may be disregarded when the general character of the volumes is taken into consideration. For though some of the methods, and parts of the treatment, are crude, we are convinced that they are on the right lines and that much may be expected from the development of experimental methods in geographical teaching.

NOTES ON A RECAPITULATORY LESSON.[1]

A River.

APPARATUS.—Relief map, to be built up in wet sand. Blackboard drawings of rivers rising in glaciers, mountains, lakes, &c.

MATTER; *to be illustrated by experiments*.	METHOD.
I. WHAT IT IS.—A river is a running stream of fresh water. A stream is a small river; a river is a large stream. A river and a stream are *alike* in being made of fresh water; they are *different* in size, the streams generally flowing into the rivers to *feed* them.	I. Ask which children have seen a stream, and draw from them what it is. Trace out the course of a stream in wet sand, and let water flow along it. Compare and contrast with rain running down a street gutter. Utilise a blackboard drawing of a river-course.
II. HOW FORMED.—A river is formed directly, or indirectly, by rain. If rivers depended on direct supplies of rain, they would dry up during the dry season. But a large part of the rain soaks into the ground, and re-appears as springs. It is because a large portion of the water-supply is got from springs that rivers keep on flowing in dry weather. Rivers are also formed by melting ice and snow on hill-sides and mountains.	II. From the "rose" of a small can pour water representing rain on the raised surface of wet sand, in which the river course in I. has been scooped out with a pencil or the finger. Slope the sand-tray so that the water soaking through the sand may come out to represent land-springs. Draw on the blackboard a sketch of land-springs, *constant and intermittent*. Make blackboard sketch of rivers rising in glaciers; and show photograph of glacier.
III. SOURCES OF RIVERS.—The beginning of a river is usually a *spring* which flows from the side of a hill or mountain. The water from the spring forms a *rill* or *brook*. Several of these as they run down to lower levels join to form a rivulet. When several rivulets meet together they form a *river*. The land from which the streamlets come to form the river is called the river *basin*; and the high land between one river basin and another is called a *water-parting* (*watershed*). It is so called from *parting* the streams that flow from it in different directions.	III. Illustrate by means of a hill of wet sand, in which with a pen handle holes are made into which water is gently poured. The water running down the vertical holes will come out of a horizontal one to represent brooks or rills. Compare the sandhills with the roof of a house; the streams coming out of the sand with the rain flowing through the eaves and rain-pipes. Mould a hollow in the sand with a very shallow basin or patty-pan, pushing the basin horizontally through the sand to give the "basin" of the river.
IV. PARTS OF A RIVER. (*a*) *Source*, the beginning of a stream or whole river.	IV. (*a*) Point out the *source* of the river and its feeders as made in the sand-tray.
(*b*) *Course*, the direction of the river, and its flow from source to mouth.	(*b*) Trace the *course* of the river drawn in the sand.
(*c*) *Mouth* (estuary and confluence), the outlet of the river.	(*c*) Make different kinds of *mouths* in wet sand for the rivers drawn therein.
(*d*) *Bed*, that on which the river rests.	(*d*) Deduce why so called, and show the dry bed and pour water into it.
(*e*) *Banks*, the raised sides. If the banks are low at the mouth of the river, a *delta* is often formed there.	(*e*) Raise these on the sand-map for raised banks, and level them to show flat banks above the deep bed marked in the sand-tray.

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[1] From "Sand-Modelling." By Tarbuck and Major.

RECENT SCHOOL BOOKS.

Modern Languages.

A Primer of French Verse for Upper Forms. Edited by Frederic Spencer, M.A., Ph.D. xi.+260 pp. (Cambridge University Press.) 2*s.* 6*d.*—Teachers owe a debt of gratitude to Prof. Spencer for this attractive volume. The theory of French prosody has been reduced to a minimum, yet we have all that is essential tersely expressed. At the same time, the editor has collected a number of excellent passages and entire poems, which are all the more welcome because they are not hackneyed. For lack of just such a book many boys and girls pass through the upper forms of our schools without gaining any insight into the structure of French verse; there is no longer an excuse for leaving them in ignorance. It is a very good book.

F. Coppée, Contes Choisis. Edited by Margaret F. Skeat. xx.+176 pp. (Macmillan.) 2*s.* 6*d.*—As Mr. Siepmann, in whose series this volume appears, rightly points out, Miss Skeat has taken very great pains to make this edition helpful in every way. The short biography, the notes and the vocabulary (a new feature in the series), all give evidence of great care and a good knowledge of what is likely to present difficulty to the young reader. The stories mostly deal with life in Paris, and a convenient plan of the streets to which reference is made in the text has been added. The appendix contains some interesting notes on word-formation.

Introduction to English, French and German Phonetics. By Laura Soames. xxvii.+178+89 pp. (Sonnenschein.) 6*s.*—The first edition appeared in 1891, and it was recognised that Miss Soames had written a most valuable book. The new edition has been reset, and contains valuable additions by Prof. Vietor, who has acted as editor at the request of Miss Soames's literary trustees. It need hardly be said that the task could not have been entrusted to abler hands. The book is most useful. Our only regret is that Miss Soames did not decide to adopt the script of the *Association Phonétique Internationale* which Prof. Vietor has now introduced into his own books.

A Three-year Preparatory Course in French. By C. F. Kroeh. ix.+370 pp. (Macmillan.) 5*s.*—The third volume of this Course has now appeared. It is on lines familiar to those who have seen the earlier volumes. These books have been written, in the first place, for use in America. Mr. Kroeh is "Professor of Languages in the Stevens Institute of Technology," and has a considerable reputation as a teacher. No one can, therefore, fail to derive help from a perusal of his works. It will be found that he is in agreement with the continental reform movement in almost all essential matters. We may refer in particular to the importance he attaches to a good pronunciation and to the use of the foreign language in the class-room.

Classics.

The Histories of Thucydides. Book VI. Translated by E. C. Marchant, M.A. xix.+82 pp. (Bell.) Paper, 1*s.*—Mr. Marchant tells us in the preface that he contemplates a translation of the whole of Thucydides, this book being an instalment. Judging from this specimen, we think that he succeeds in being more literal than Jowett, and more accurate and idiomatic than Dale—to mention the two of his predecessors who are perhaps best known, though in different circles.

Aristotelis Poetice. By T. G. Tucker, Litt.D. vii.+52 pp. (Nutt.) Paper, 2*s.* net.—This is a critical edition of the text of the "Poetics," noteworthy for taste and acumen. Dr. Tucker prints, in large type, what he believes to be the true text of Aristotle, with the traditional numbering of the sections and also a new numbering. Various readings and the conjectural emendations of scholars which are not admitted are found at the foot of each page, and the editor's own restorations in the text are marked by an asterisk. The use of smaller type marks the paragraphs which are admittedly not from the hand of the author himself.

The Pastoral Epistles. (Cambridge Greek Testament for Schools and Colleges.) By J. H. Bernard, D.D. lxxviii.+192 pp. (Cambridge University Press.)—In the introduction we find the question of the authorship of these epistles fairly faced, and after a full discussion of difficulties and objections, the "conservative" view strongly maintained. There are also chapters devoted, one to an examination of the heresies alluded to, and another to maintaining the distinction between the *ἐπίσκοπος* and the *πρεσβύτερος*. The many interesting points, whether peculiar to this group of the Apostle's writings or otherwise, are dealt with very fully in the notes, and no point of importance seems to be overlooked. There is a very complete index, in which different signs are employed to show the peculiarities in the language of the epistles.

The Agricola of Tacitus. (Blackie's Latin Series.) By W. C. F. Walters, M.A. 175 pp. (Blackie.) 1*s.* 6*d.*—The best features of this series are excellently maintained in this volume. Agricola was governor of Britain from 78-84 A.D., and therefore it was a good idea to illustrate the book with photographs of Roman remains in this country, one of which is here reproduced, the bridge near Bothwell. The notes are of good quality, and incorporate all that is best of recent annotation, in addition to the editor's own work.

Roman Bridge on the Calder, near Bothwell.

How to Learn Philology. By E. H. Miles, M.A. xxiii.+292 pp. (Sonnenschein.) 5*s.* net.—The author has been impelled to write this novel, interesting, and valuable book, by having the fact impressed upon him during several years' lecturing and coaching, that there is no work in the market which shows how to begin the study of philology. The consequence of this state of things is that the beginner (the present writer well remembers his own experiences) spends a great deal of time in finding out exactly what he is expected to do, and how to set about doing it. This book will save him a considerable amount of unnecessary and mis-directed energy, and he will then be able to use Giles's "Manual" and Brugmann's "Grundriss" with profit from the first. The part played, in fact, is that of a pioneer clearing away a mass of difficulties from a wide stretch of land, in order to ensure a successful advance into an unknown country.

Mr. Miles very wisely makes use of English words to show principles, but has deliberately avoided, where possible, the introduction of "Sanskrit and other unfamiliar languages," and there is much to be said for his decision, but personally we should have preferred to see the moderate use of these for the purpose of illustration. Those who are setting out upon the study of the fascinating subject of classical philology cannot do better than provide themselves with this book, which will also supply the teacher with much matter and a practical method.

Edited Books.

The Cambridge Bible for Schools. The Book of Proverbs, by the Ven. T. T. Perowne, B.D. 193 pp. 3*s.* The Books of Chronicles, by W. E. Barnes, D.D. 303 pp. 4*s.* (Cambridge University Press.)—Each of these volumes constitutes a valuable addition to this important series of commentaries, and they both rank with the very best of those already issued. If at some future time the syndics of the Pitt Press should see fit to put the Apocryphal Books of Ecclesiasticus and the Book of Wisdom into the same competent hands as have been engaged on this edition of the Proverbs of Solomon, the three volumes together would be alone sufficient to commend the series. Rarely has this particular book been so capably handled. Unlike Dr. Horton's edition, it is pure criticism; it is not a mixture of homiletics and doctrine. The second chapter of the introduction, on the literary character of the Proverbs, is masterly, and the summary of their moral and religious teaching proves that the editor possesses that rarity among theologians—a mind capable of estimating truth justly, even when it is not expressed in the formularies of any particular theological school. The notes are excellent. In dealing with the Books of the Chronicles, Dr. Barnes has well performed a task of no mean difficulty. The frequent overlapping of these books with those of Samuel and the Kings are compensated by quite as frequent and considerable omissions; and the summary of the contents of the Chronicles, which Dr. Barnes gives in his introduction, only renders clearer the patient scholarship which has struggled with the complexities of these narratives. In dealing with the important question of the sources from which the chroniclers obtained their information, the editor surveys the ground in a very masterly way; and in considering the character and the purpose of these somewhat tantalising productions his conclusions commend themselves rather by their historical breadth and perspective than by any other tests. If this series of volumes has served any pre-eminent purpose, it is that of inducing its students to consider facts of history and scholarship as of primary importance; and to this general aim these two volumes lend material aid.

English Poetry for Schools. By G. Cookson and A. V. Houghton. Book I., Primary. 166 pp. 1*s.* 6*d.* Book II., Secondary. 340 pp. 3*s.* 6*d.* (Macmillan.)—This is presumably the way that English poetry is taught in Egypt, where the editors are respectively assistant and principal of the Kedivieh School in Cairo; and if so, that way is at once comprehensive and excellent. These two anthologies differ very sensibly from any other with which the writer is acquainted, but they are as useful as they are novel. The first volume is naturally a stepping-stone to the second, but the two together cover all the ground from the sixteenth century to the present day; and though such a range necessitates only brief selections, the compilers' high appreciation of what is really excellent in English poetic thought and diction is obvious on every page. Sufficient is here given to whet the appetite for more; and to this end some valuable notes and appendices are included in these volumes. One note on the place of recitation in the teaching of a language is especially worthy of consideration; and one appendix is devoted to biographical sketches of those poets whose works are included in this collection. If this attempt to present the whole subject briefly and clearly is as much appreciated as it deserves to be, a very considerable improvement will follow in class work.

Selections from Tennyson's Poems. By E. C. E. Owen. 133 pp. (Edward Arnold.) 1*s.* 6*d.*—These "selections" are limited by the dates 1832-1855, but over that period they are distinctly happy and representative. The editor says that his book is intended for boys and girls between the ages of fifteen and eighteen, which leads him to omit many beautiful things, but which has still not led him to write his introduction in any very juvenile way. The sketch of Tennyson's life is supplemented by a criticism of his poetry. Both are masterly, but one cannot help thinking that both are also very considerably above the intelligence of the average boy or girl of the age specified by the editor. As a matter of fact, one is tempted to seriously question whether we are not suffering educationally from "too much Tennyson." He is essentially a metaphysician, a thinker, a poet of the soul; who even in his lighter vein does not often escape from the "Obstinate questionings, Of sense and outward things;" who wanted to analyse what Shakespeare (say) was content to experience. Such poetic diet is not milk for babes, and young people may have too much of it. Still this selection deserves great commendation, and the notes (which, however, are rather clumsily arranged at the end of the volume) are excellent.

History.

A History of England for High Schools and Academies. By K. Coman and E. K. Kendall. (The Macmillan Co.) xxviii.+507 pp. 7*s.* 6*d.*—This book, which hails from America, is well printed, well bound, and well illustrated. On the whole, it tells the history of England fairly and faithfully. We cannot give it higher praise, because it lacks the more scholarly qualities. It is obviously inspired by Green's histories, and has the defects as well as the merits of that writer. It is popular, *i.e.*, it is adapted more for the "general reader" than for the student. We look to it in vain for definite statements of fact, especially in the constitutional history. Typical of the style is the recommendation of Macaulay's Essays. That famous collection may be good literature, but they cannot nowadays be regarded seriously as history. History must at least aim at being scientific; only in this way can the study claim the attention of serious people, and it is because this book fails to be exact, not because it is incorrect so far as it goes, that in reading it we feel a sense of disappointment.

Geography.

The Evolution of Geography. By John Keane. (Stanford.) xv.+179 pp. 6*s.*—The most interesting feature of this book consists of the reproduction of ancient maps, illustrating the ideas of early geographers. But the text is also worth reading by all teachers. The author traces the knowledge of geography before the Christian era, and the ideas on the shape of the earth till the growth of the Ptolemaic conception of its sphericity. The advent of Christianity and of the barbaric invasion destroyed all scientific conception of geography, and we begin again, as it were, with "mappe-mondes" based on the Bible. Very curious as illustrations of human ignorance are the plans thus evolved, some of which are here reproduced and others described. The world is flat, of extraordinary shape. Jerusalem is at the centre, and everything assumes wonderful proportions and situations. The British Isles, *e.g.*, are of all possible shapes, and may be anywhere off the western coast of Europe from Spain to Norway. Gradually, however, knowledge grew again, and the author ends with the first circumnavigation of the globe and a reproduction of the "gores" of Schoner's globe of 1523. We heartily recommend the book to teachers and to the school library.

Science and Technology.

Elements of Natural Philosophy. By Alfred Earl, M.A., viii.+320 pp. (Edward Arnold.) 4s. 6d.—Mr. Earl deals with the fundamental principles of chemical and physical science, and hopes that indirectly he has met the requirements of the General Elementary Science papers set at the London University Matriculation examination. The author's name is a sufficient security for the correctness of the information included in the volume, but it is to be feared that the introductory pages will prove a little difficult for a beginner, since they deal with scientific generalisations in language which is too far removed from an ordinary boy's everyday conversation. The volume is intended as a handbook for the laboratory for the use of beginners in science, but the arrangement of the chapters when viewed from this standpoint is unfortunate. The first chapter includes the following practical work:—(*a*) pendulum observations; (*b*) demonstrations of the energy of moving bodies; (*c*) changes in size and state when bodies are heated; (*d*) examples of chemical changes. The choice of subjects may be logical enough, but it does not result in a satisfactory working course. Chapter ii. on the measurement of simple quantities includes no precise instructions for practical work, though at the end of the chapter an admirable series of exercises is given which will be of the greatest value to the teacher, though in their present form they are of little use to the pupil. It is unnecessary to deal with each chapter; it is sufficient to say that, while the book is likely to be useful to teachers for its suggestiveness, it cannot be recommended as a guide to be placed in the hands of a beginner starting experimental work.

Heat for Advanced Students. By Edwin Edser, Assoc. R.C.S., viii.+464 pp. (Macmillan.) 4s. 6d.—Even a cursory glance will discover the marked superiority of Mr. Edser's volume over the current text-books which have hitherto been available to the average student in this subject. The author assumes that the student is familiar with the elements of mathematics as far as Binomial Theorem; and it is gratifying to find that the notation of the calculus is also used, since the application of this to simple physical problems is an admirable means of conveying a clear notion of the principles of the calculus to the student who may not have studied it as a branch of pure mathematics. Numerous simple experiments, many of which are new, are fully described in such a manner that the student can readily obtain an experimental knowledge of the subject without the aid of an auxilary text-book. The subject-matter includes an admirable treatment of thermometry, with a complete and lucid description of the methods of determining the errors of mercurial thermometers and their corrections; and the same remark applies to the subsequent treatment of Calorimetry, the Kinetic Theory of Gases, and Adiabatic Transformations. An account of Prof. Dewar's experiments on the liquefaction of air and hydrogen, of Dr. Linde's method of liquefying air, and a complete chapter on Van der Waals' theory indicate that the book is thoroughly up-to-date. The book contains over two hundred illustrations, the originality and high quality of which do credit both to the author and to the publisher. There are several minor mistakes and misprints which should be corrected in a second edition—*e.g.*, (p. 14, end of l. 15) "+32" omitted; (p. 28, l. 21) 758·2 should read 756·4; (p. 205, l. 22) for m read E; (p. 300) $(pv+dv)$ should read $p(v+dv)$; and, in Fig. 154, the symbol α is omitted.

A Text-book of Physical Chemistry. By Dr. R. A. Lehfeldt, xii.+308 pp. (Edward Arnold.) 7s. 6d.—This is by no means an elementary book. To thoroughly understand Dr. Lehfeldt's arguments a very considerable knowledge of mathematics is necessary, as well as an intimate acquaintance with the facts and generalisations of physics and chemistry proper. Since the theories of physical chemistry are so dependent upon thermodynamic reasoning, two chapters on the principles of thermodynamics are included. The author has been to much pains to make his work intelligible to the earnest student, and it is easy to see from many sections in the book that Dr. Lehfeldt is not only quite at home in this modern branch of exact science, but also that he has had considerable experience in explaining its difficulties to many types of student. As a clear interpretation of an important subject, the book can be confidently recommended.

Introduction to Physical Chemistry. By James Walker, D.Sc., Ph.D. x.+335 pp. (Macmillan.) 10s. net.—Professor Walker already has a deservedly high reputation as a clear and stimulating writer on chemical theory, and in his most recent book there is abundant evidence that his right hand has not forgot her cunning. Assuming the reader to be acquainted with elementary mathematics, and to have an ordinary knowledge of physical and chemical science, the author has dealt with the fundamental subjects of physical chemistry at some length, and in sufficiently simple language for a sixth-form boy to be able to read his book with intelligent appreciation. A particularly valuable characteristic of this volume is that the connection between the laws of chemistry which are ordinarily taught in a school course and those which are classified under the present-day title of physical chemistry is made quite evident, and a very real danger avoided, viz., that which leads the beginner to think of physical chemistry as a subject quite apart from ordinary chemical knowledge. We agree with Prof. Walker that, after mastering the contents of this book, the student will have no difficulty in profiting by the larger works of Ostwald, Nernst, and van't Hoff.

Miscellaneous.

Light, Shade and Shadow. By John Skeaping. 222 pp. (George Newnes, Ltd.) 3s. 6d. This instructive book is the direct outcome of the South Kensington system of teaching drawing; and since every trained elementary school teacher is supposed to know something of the subject of which Mr. Skeaping writes, his book is likely to become largely used. It includes chapters on Model Drawing and the principles which underlie Sketching from Nature, information not very widely known five-and-twenty years ago. The original "letter designs" are an attractive characteristic, and the volume is well and fully illustrated.

"*One Called Help,*" *or The Slough of Despond.* By Lucy H. M. Soulsby. 51 pp. (Longmans.) 4d. net.—This delightful little book might, with advantage, be put into the hands of every girl leaving school. It is a reprint of one of Miss Soulsby's very helpful addresses, and we have read every word with the greatest pleasure.

John Milton: A Short Study of his Life and Works. By W. P. Trent. (Macmillan.) 277 pp. 3s. 6d.—Since the publication of Macaulay's celebrated Essay on Milton, the great poet of Puritanism has received no mean share of attention from critics of all schools, and of many countries. It might have been thought, however, that the two lives of Milton contributed by Mark Pattison and Dr. Garnett respectively to the "English Men of Letters" series and to Mr. Walter Scott's series of "Great Writers" would have well nigh exhausted the capabilities of the subject for treatment in this form. But Mr. William P. Trent has come into court with a volume upon Milton which is at once charmingly readable, very full, and carefully critical; altogether a book worth reading upon a very important figure in the history of English letters. Mr. Trent rightly estimates his subject when he notes in the "Life", that Milton "was preparing to be a *vates* when circumstances determined that he should become, not a dictator, but a dictator's spokesman and champion. For twenty years he wrote no verse save a comparatively small number of sonnets, and his silence during a period when most poets do their best work might easily have resulted in England's having only one supreme poet instead of two." Milton's work in prose and in verse is dealt with in this volume in a way which prompts a reviewer to quote at unpardonable length. For a thorough appreciation of Mr. Trent's work, the reader must go to the volume itself. As with Russell Lowell's celebrated criticism of the same poet, every page reminds us that we have here American genius engaged in the dissection of English literature; but a careful perusal discloses the fact that the sturdy Puritanism which is common to both nations is a bond of spiritual sympathy between them both. On neither side of the Atlantic will any poet's fame suffer at the hands of critics who go to their tasks with the lucid insight and competent skill which Mr. Trent has spent in thus estimating Milton from the point of view of an American of to-day.

LONDON MATRICULATION,

JUNE, 1900.

Monthly Test Papers.—No. 1.

THE first of a series of five test papers covering the syllabuses of all the compulsory subjects of the London University Matriculation Examination, together with the test papers in French, is published this month. Copies of any of the papers can be obtained in a form suitable for distribution in class. The reprinted papers are sold in packets of twenty-five at a cost of 6d. net (post free) for each subject. Orders for papers *must be pre-paid*, and be addressed to the Editors of THE SCHOOL WORLD. Judging by the demand for similar papers last year, teachers would be well advised in making early application, as a limited number only is printed.

Latin Grammar and Composition.

(1) Give the ablative singular and accusative plural of iter, liber, mulier, liber, acer, vir, cadaver, cena, castra, poema.

(2) How do you form the vocative case singular of words ending in—*ius*. Illustrate your answer by examples.

(3) Give the gender, meaning, and genitive singular of—numerus, tempus, humus, pelagus, laurus.

(4) Give the comparative and superlative of—malus, dubius, malevolus, vetus, pulcher.

(5) Distinguish between—uter, uterque; alius, alter; nostri, nostrum (genitives plur. of ego); qui, quis; ipse, iste.

(6) Parse—nactus, adigi, desilite, arcessitam, imperasset.

(7) Give the present infinitive active, the third person plural perfect indicative active, and passive of—cognovisset, coactis, contractis, sublatis, submoveo, seco, do, domo, lavo, fugo.

(8) Classify the various ways in which the accusative case is used, and give examples.

(9) Put into Latin:

(*a*) It was impossible to discover what methods they adopted in war, or what were their habits.

(*b*) He gives him instructions to reconnoitre the country and to return to him as soon as possible.

(*c*) Ambassadors come to him to promise that they will give hostages and submit to Roman authority.

(*d*) He determined to wait at anchor until the remaining ships arrived.

(*e*) Cæsar demanded hostages of the Britons, and said that he would pardon their imprudence.

Latin—Cæsar.

DE BELLO GALLICO, IV. Ch. 20—27 (inclusive).

(1) Translate:

Ch. XXII. Dum in his locis . . . obsidum imperat.
Ch. XXIII. Interim legatis . . . naves constituit.
Ch. XXIV. Erat ob has causas . . . . insuefactos incitarent.

(2) Translate, with notes upon the grammatical construction of the words in italics:

(*a*) *Huic* imperat, quas *possit*, *adeat* civitates horteturque ut populi Romani fidem sequantur seque celeriter eo venturum *nuntiet*. Volusenus perspectis regionibus omnibus, quantum ei *facultatis* dari potuit, qui *navi* egredi non *auderet*, quinto die ad Cæsarem revertitur quaeque ibi *perspexisset* renuntiat.

(*b*) At barbari praemisso equitatu et essedariis, quo plerumque *genere* in proeliis uti consuerunt, *reliquis copiis* subsecuti nostros navibus egredi prohibebant.

(*c*) magno *sibi usui* fore arbitrabatur.

(*d*) auctoritas eius *magni* habebatur.

(3) Give the meanings of the following words as they are used by Cæsar in these chapters—maturae, subministro, tempestas, tertia vigilia, nisi in alto, tormenta, ad nutum, funda, universi, oratoris modo.

(4) What work did Cæsar assign to each of the following—Sabinus, Volusenus, Cotta, Commius, Rufus.

Give, in order of their rank, the titles by which officers in the Roman army were known.

(5) What are the reasons which Cæsar gives for his invasion of Britain?

Unprepared Translation:

Silurum colorati vultus, torti plerumque crines et posita contra Hispania Hiberos veteres traiecisse easque sedes occupasse fidem faciunt: proximi Gallis et similes sunt: Sermo haud multum diversus: in deposcendis periculis eadem audacia et, ubi advenere, in detractandis eadem formido. Plus tamen ferociae Britanni praeferunt, ut quos nondum longa pax emollierit: nam Gallos quoque in bellis floruisse accepimus: mox segnitia cum otio intravit, amissa virtute pariter ac libertate.

English Language.

In this subject each test will consist of ten questions, three of which will deal with analysis, literature and composition. The scheme of tests is:—I. The Sources and History of our Vocabulary. Literature, to A.D. 1300. II. Orthography and Accidence. Literature, 1300-1550. III. Nouns, Pronouns, Verbs. Literature, 1550-1660. IV. Adjectives, Adverbs, Prepositions, Conjunctions. Literature, 1660 to present time. V. Revisional.

THE SOURCES AND HISTORY OF OUR VOCABULARY.

(*Literature. From the earliest times to* A.D. 1300.)

(1) At what periods have we borrowed words direct from French? Give examples. Discuss the spelling of verbs ending in *-ize* and *-ise*.

(2) Write an account of the dialects of Old English, and trace their gradual decline.

(3) From what sources and at what periods did we borrow the following words:—*cherry*, *orange*, *onion*, *banyan*, *cider*, *damson*, *mango*, *yam*?

(4) Write notes on the following words:—*lady*, *witchelm*, *island*, *seldom*, *park*, *astonish*, *surgeon*, *gospel*, *livelihood*, *farthing*.

(5) Show that the grammatical structure of English is almost entirely Teutonic.

(6) Distinguish carefully between derived and cognate words.

(7) What position does English hold relative to other Teutonic languages?

(8) Analyse: "In one of my daily jaunts between Bishopsgate and Shacklewell, the coach stopped to take up a staid-looking gentleman, about the wrong side of thirty, who was

giving his parting directions (while the steps were adjusting) in a tone of mild authority to a tall youth, who seemed to be neither his clerk, his son, nor his servant, but something partaking of all three."

(9) What do you know of the writings of any two of the following:—Cædmon, Cynewulf, Bede, Alfred, Geoffrey of Monmouth?

(10) Write an essay on—

(*a*) Can the war with the Transvaal be justified?
(*b*) The organisation of outdoor exercise in schools.

English History.

(To 1154.)

Not more than **eight** *questions to be attempted, of which one must be Q.* **12.**

(1) Write down the chief events (with dates) connected with the Roman dominion of Britain. What do you consider the most important results of the Roman occupation?

(2) Describe, in outline, the probable course of the English Settlement of Britain.

(3) Describe the principal steps in the conversion of England to Christianity.

(4) By what means was the conversion of Ireland effected? Compare and contrast it with that of England.

(5) What have been the results of the Scandinavian settlements in Great Britian? What districts came under their law and rule?

(6) To what extent did Alfred, Edward the Elder, and Edgar, respectively, contribute to the consolidation of England?

(7) (*a*) Give a summary account of the West-Saxon realm, 892-1016.

(*b*) Explain by what right the several Danish kings came to the English throne.

(8) Show the steps by which William the Norman possessed himself of the throne, and explain his policy as an English king.

(9) In what way did the Norman conquest of England affect Scotland?

(10) (*a*) Criticise the statement that Stephen was a usurper.

(*b*) What circumstances brought about the "Battle of the Standard"? Give a short account of the battle, and indicate carefully where the encounter took place.

(11) Write a short life of *either* Anselm, *or* Canute, *or* Dunstan.

(12) Draw a map *either* of Roman Britain, *or* of England under Alfred.

NOTE.—The five test papers contained in this series incorporate all the questions contained in the last eight papers set at the London University Matriculation (1896-1899), and as far as possible they adopt the actual words of the questions actually set. Half of these eight papers have been set by literature examiners, and half by history examiners. In accordance with recent practice, each paper consists of twelve questions, of which only eight are to be attempted; and there are always one or two questions in geography which are compulsory. Three hours are allowed for each paper, but in these test papers the questions have been so arranged that the teacher can easily break them up into smaller portions.

Arithmetic and Algebra.

(*Including Vulgar and Decimal Fractions, Practice, Proportion and Percentages, in Arithmetic, and Simultaneous Equations with two or more unknown quantities and problems thereon, Easy Fractions, Square Root and Factors, in Algebra.*)

(1) Reduce to their simplest forms the following expressions:—

$$\text{(i.)}\quad \frac{4\frac{1}{2}+7\frac{2}{5}}{3\frac{2}{5}+4\frac{1}{3}} \div \frac{6\frac{3}{4}-3\frac{1}{12}}{4\frac{1}{6}-2\frac{2}{7}};$$

$$\text{(ii.)}\quad 2\tfrac{1}{2} \text{ of } \frac{4\cdot25}{5\cdot\dot{6}} \text{ of } \frac{\cdot0\dot{7}}{\cdot0625} \div \frac{\cdot1\dot{7}}{17\frac{2}{7}}.$$

(2) What will be the value in francs (to the nearest unit) of a kilogram weight of gold, the value of gold being £3 18s. per ounce Troy. (1 franc = 9¾d. and 1 lb. Troy = 373·24 grams).

(3) (i.) A bankrupt's assets, when realised, are expected to amount to £4,434 14s. 1d.; if his liabilities be £4,973 10s., how much will he be able to pay in the £?

(ii.) A dealer buys eggs at the rate of 12s. 6d. per hundred and sells them for 1s. 9d. a dozen; what is his profit per cent.?

(4) Show that $a^2 \times a^7 = a^4 \times a^5$.

Find the continued product of $x+y+z$, $x+y-z$, $x-y+z$ and $-x+y+z$.

(5) Divide $a^3+b^3-c^3+3abc$ by $a+b-c$.

Prove that $(x-1)(x+2)(x-3)(x+4)+25$ is the square of x^2+x-7.

(6) Solve the equations:—

(i.) $\frac{1}{3}(x-4)(x+2) = \frac{1}{4}(x-2)(x+3) + \quad x(x-6)$;

(ii.) $y-x+3xy=0$
$y+z=8yz$
$z+2x=4xz$.

(7) A and B run a quarter-mile race, when A wins by forty yards; if A had run ½ yard less per second and B ½ yard more per second, B would have won by 13¾ yards. In how many seconds would each run the whole distance?

(8) Resolve into factors as far as possible:—

$3x^2-17x-130$, x^4-3x^3-x+3, $x^6+x^4y^2-x^2y^4-y^6$.

(9) Find to four terms the square root of $1-3x$.

Answers.

(1) (i.) $\frac{12}{141}$; (ii.) $206\frac{1}{4}$. (2) 3086 francs. (3) (i.) 17s. 10d. (ii.) $16\frac{2}{3}$. (4) $2x^2y^2+2y^2z^2+2z^2x^2-z^4-x^4-y^4$. (5) $a^2+b^2+c^2-ab+bc+ca$. (6) (i.) $-2\frac{1}{3}$; (ii.) $x=\frac{1}{8}$, $y=\frac{1}{5}$, $z=1$. (7) A, $53\frac{1}{3}$ seconds; B, $58\frac{2}{3}$ seconds. (8) $(3x+13)(x-10)$; $(x-3)(x-1)(x^2+x+1)$; $(x^2+y^2)^2(x+y)(x-y)$.

$$(9)\quad 1-\frac{3}{2x}-\frac{9}{8x^2}-\frac{27}{16x^3}.$$

Geometry.

(*Euclid. Book I.*)

(1) If the angles at the base of a triangle be equal, then the sides which subtend these angles shall also be equal.

(2) The greater angle of every triangle has the greater side opposite to it.

The greatest straight line that can be drawn within a square is the diagonal.

(3) Two straight lines AB, CD, bisect each other at E; a straight line PQ is drawn through E, cutting AC and DB in P and Q; show that CP equals DQ.

(4) The exterior angle of a triangle is equal to the sum of the two interior and opposite angles, and the three interior angles are together equal to two right angles.

If within a rectilineal figure straight lines be drawn from each of the angular points, making equal angles with the adjacent sides, taken in order, show that the rectilineal figure so formed is equiangular to the given rectilineal figure.

(5) Prove that all parallelograms on the same base and between the same parallels are equal in area.

(6) The straight line joining the middle points of two sides of a triangle is parallel to the third side.

Prove that any two parallel straight lines drawn through the middle points of two sides of a triangle intercept upon the base a segment equal to half the base.

(7) Construct a rectangle equal to a given rectilineal figure.

(8) In a right-angled triangle the square on the hypotenuse is equal to the sum of the squares on the sides.

Describe a square equal to the difference of two given squares.

Given a straight line of unit length, draw a straight line of length $\sqrt{3}$.

General Elementary Science.

PHYSICAL QUESTIONS.

(1) Describe experiments to prove that no loss of mass accompanies (*a*) Evaporation, (*b*) Fusion, (*c*) Solution, and (*d*) Chemical change. What general property of matter is brought out by these experiments?

(2) How would you proceed to determine the diameter of a wire in millimetres, (*a*) by direct measurement, (*b*) by weighing and calculation.

(3) A ball is dropped from a balloon; what would be its velocity after it has been falling for three seconds, and after it has continued its descent for a fourth second? What is the cause of the difference?

(4) Describe (*a*) how a delicate balance is constructed and used, and (*b*) how a convenient system of "weights" can be arranged in multiples and submultiples of a standard unit.

(5) You are provided with a good-sized cork; explain how you would proceed to experimentally determine its volume.

CHEMICAL QUESTIONS.

(1) Carefully explain what experiments lead to the conclusion that—"Iron in rusting gains in mass, taking some material out of the air, and this material is the part of the air which assists burning."

(2) If a sample of air from the top of Snowdon were analysed by a chemist, what gases would he find in it? Write down the chief property of each constituent.

(3) How would you proceed to demonstrate that gunpowder is a mixture of at least three substances? Explain how you would proceed to separate the constituents and make a list of the apparatus you would require.

French.

I. Translate the following passage:—

Vous avez raison, fit Charles Maurage; la venue de la bicyclette est infiniment plus qu'une nouveauté sociale: c'est un des plus grands événements humains qui se soient produits depuis les origines de notre race. Je ne sais si l'art du feu, l'écriture, l'imprimerie, ont plus d'importance; mais je vois clairement que la bête lente qu'était devenue l'homme pour avoir sacrifié ses pattes de devant à "tater" l'univers est redevenue une bête rapide, et parmi les plus rapides. La portée d'un tel fait est incalculable, et je ne développerai pas ici ce qu'on a imprimé récemment, que la bicyclette était le premier stage de l'aviation: l'homme y apprend l'équilibre presque dans le fluide et s'y fait un œil agile et planant d'épervier.

II. Translate into French:

During fifty days the siege went on. During fifty days the young captain maintained the defence with a firmness, vigilance and ability which would have done honour to the oldest marshal in Europe. The breach, however, increased day by day. The garrison began to feel the pressure of hunger. In such circumstances, any troops with so few officers might have been expected to show signs of insubordination.

III:

(1) Write the following in the plural—*bail*, *abat-jour*, *quart d'heure*, *notre cheval noir*; and in the singular—*mes fils*, *ces affaires*, *les héros*.

(2) Prefix the definite article, and assign meanings to—*été*, *légume*, *poisson*. What is the gender of *personne*? Write in French—"No one has gone out to fetch the paper."

(3) Give the interrogative form of the future of *acheter* and the negative form of the present indicative of *mettre*.

(4) Conjugate in the singular the present subjunctive of *se plaindre* and *être*, and in the plural the preterite of *se convenir* and *devoir*. Give the present and past participle of *savoir* and *coudre*.

(5) How are the degrees of comparison generally formed in French? Give examples and compare *bon*, *mauvais* and *petit*.

JUNIOR OXFORD LOCAL EXAMINATION, JULY, 1900.

Monthly Test Papers, No. 1.

SIX test papers in the ten most popular subjects for the Junior Oxford Local Examination in July, 1900, have been specially prepared for us by teachers with a large experience of the requirements of the examinations. The first of the series is given below. Copies of the papers in any of the subjects can be obtained in a form suitable for distribution in class. The reprinted papers are sold in packets of twenty-five, at a cost of 6d. net (post free). Orders for papers *must be pre-paid*, and should be made to the editors of THE SCHOOL WORLD. Judging by the demand for similar papers for last year's Cambridge Local Examinations, we would advise teachers to make early application, as a limited number only will be reprinted.

Arithmetic.

(*Including Vulgar and Decimal Fractions, Practice and Simple Proportion.*)

(1) Simplify:

(i.) $\frac{5460}{11076}$ ÷

(ii.) $\{4\frac{3}{8}+3\frac{5}{6}\}\div\{4\frac{3}{8}-3\frac{5}{6}\}$.

(2) Divide the product of ·19 and ·0525 into thirty-five equal parts.

(3) Find the value of ·6453125 of £4, and express as the decimal of a cwt. the difference between $\frac{1}{3}$ of 2 qrs. 5lbs. 8ozs. and $\frac{23}{58}$ of 3 qrs. 3 lbs.

(4) If 45 yds. 2 ft. 9 in. of tubing cost £1 2s. 11½d., what will be the price of 27 yds.?

(5) Reduce 13 ac. 1 ro. 14 po. 12 sq. yds. to sq. feet.

(6) Find by Practice the value of 3 tons 5 cwt. 2 qrs. 12 lbs. 8 oz. of copper at £72 6s. 8d. a ton.

(7) A man loses $\frac{2}{7}$ths of his money, and afterwards $\frac{1}{3}$rd of the remainder; what fraction of it has he left?

If the original sum were 3 guineas, what is the actual sum remaining?

(8) A man declares himself bankrupt, owing one among other creditors the sum of £144 5s.; how much does the creditor receive if the bankrupt pays 11s. 10d. in the £?

(9) A stationer buys 15 gross of pencils at 14s. 6d. a gross; how much more will he gain by selling them for 1¼d. each than by selling them for 2s. a score?

If he sells 5 gross singly and the remainder by the score, what will be his total gain?

(10) Divide £15 10s. among 3 people so that the first may receive twice as much as the second and the second three times as much as the third.

Answers.

(1) (i.) $\frac{35}{71}$; (ii.) $15\frac{2}{13}$. (2) ·000285. (3) £2 11s. 7½d.; ·125.
(4) 13s. 6d. (5) 581089½ sq. ft. (6) £237 5s. 10⅞d.
(7) $\frac{10}{21}$; £1 10s. (8) £85 6s. 11½d. (9) 9s; 1s. 6d.
(10) first, £9 6s.; second, £4 13s.; third, £1 11s.

Old Testament—Genesis.

(1) Why did Abraham receive the command to separate himself from his family? Give an account of his journey until he entered into Egypt.

(2) What were Abraham's relations with Abimelech?

(3) Relate the story of Lot as far as his escape to Zoar.

(4) Say what you know of the following places:—Shechem, Gerar, Mamre, Ur of the Chaldees, Haran, the Vale of Siddim, Kadesh, Beth-el, Hebron.

(5) "Having neither beginning of years or end of life." To whom does this New Testament reference apply? What else is said of him? And what were his relations with Abraham?

(6) In what terms did God encourage Abraham? And how did he renew the covenant?

(7) Explain and give the context—
(i.) "Souls that they had gotten."
(ii.) "Canaanite and Perizzite dwelled then in the land."
(iii.) "An horror of great darkness."
(iv.) "He shall dwell in the presence of his brethren."

New Testament—St. Luke.

(1) Give as fully as you can an account of S. Luke's relations with S. Paul.

(2) Write in full any two of the Canticles contained in this Gospel. "All flesh shall see the salvation of God." Give the context.

(3) Draw a map to show the position of Nazareth, Bethlehem,

"the Wilderness," Capernaum. What was the signification of the title "King of Judæa"?

(4) What did our Lord teach at Nazareth, and why was his teaching rejected? Describe his escape.

(5) What is our only glimpse of the early life of Jesus? What may we infer from it?

(6) Explain the connections existing between Tiberius Cæsar, Pontius Pilate, Herod the Tetrarch, Archelaus, Philip and Herodias.

(7) Explain
- (i.) "Disciples of John and of the Pharisees."
- (ii.) "The course of Abia."
- (iii.) "The latchet of whose shoes I am unworthy to unloose."
- (iv.) "In a moment of time."

English Grammar.

Scheme of Tests:—I. Sentence construction and the functions of words. II. Nouns, Adjectives, Pronouns. III. Verbs. IV. Adverbs, Prepositions, Conjunctions. V. Analysis and Word Formation. VI. Revisional. Two subjects for essays will also be given in each test paper.

SENTENCE-CONSTRUCTION AND FUNCTIONS OF WORDS.

(1) Form a sentence containing at least five different parts of speech. (It must contain an Object.)

(2) What do you understand by a Phrase? Give four instances of the use of Phrases.

(3) Explain carefully the functions of Prepositions.

(4) What is meant by "Verbs of incomplete predication"? Give instances.

(5) What is, in general, the function of an Adjunct?

(6) What meanings has each of these words—ball, foot, cut, nail?

(7) For Essays—(*a*) A stitch in time saves nine.
(*b*) Little strokes fell great oaks.

English History.

(1066—1154.)

(1) State briefly but clearly—

(*a*) on what grounds Duke William claimed the English crown;

(*b*) how he obtained possession of the English crown;

(*c*) how he made good his hold over all England.

(2) What is an *Archbishop?* Name any two archbishops who lived during the Norman period, and describe their relations with the English kings of their time.

(3) Write a life of Robert of Normandy.

(4) Trace the relations between England and Scotland during the Norman period.

(5) The reign of Henry I. has been contrasted with that of Stephen by saying that in one case "feudalism was under control," and in the other case "feudalism was unchecked." Explain and illustrate this contrast.

(6) Write down all the following place-names one under the other. Opposite each name say briefly—

(*a*) where the place is;

(*b*) how it came into the history of the Norman period.

Anjou, Brenville, Channel Islands, Gerberoi, Lincoln, New Forest, Oxford, Salisbury, Tenchebrai, Wallingford.

As You Like It.

(1) Describe the character of Jaques, and illustrate your answer by quotations.

(2) The rural life of England in Shakespeare's time figures largely in this play. Give some account of the characters in which it appears.

(3) Explain, with reference to the context—

(*a*) Is there any else longs to see this broken music?

(*b*) Thou art not for the fashion of these times.

(*c*) Since Pythagoras' time that I was an Irish rat.

(*d*) Good wine needs no bush.

(*e*) You must borrow me Gargantua's mouth first.

(*f*) The chroniclers of that age found it was "Hero of Sestos."

(4) Quote as exactly as you can the passages beginning with—

(*a*) All the world's a stage,
And all the men and women merely players.

(*b*) O, good old man, how well in thee appears
The constant service of the antique world.

(*c*) Now, my co-mates, and brothers in exile.

(5) What differences do you notice between the characters of Frederick, the usurping Duke, and Oliver, the unnatural brother?

(6) In what connection and with what meaning are the following words used:—Allottery, quintain, roguish, parlous, nativity, purlieus, hurtling.

General Geography.

(1) Explain the meaning of—geyser, tundra, cyclone, glacier, meridian, watershed.

(2) Give as accurately as you can the position of the Great Barrier Reef, Corea, Carinthia, the Alleghanies, Torres Strait, Mafeking.

(3) Draw a sketch map of France: show the position of Rennes, Toulon, Orleans, Auvergne Mountains, River Loire, River Seine, Tours, Bayonne, and mark the boundaries.

(4) Give an account of Land and Sea Breezes, and compare them with Monsoons.

(5) Draw a map of (*a*) the Yorkshire Ouse or (*b*) The Thames.

(6) Name and give the position of the chief British Possessions in Africa.

French.

(1) Translate into French:

(*a*) At what time in the morning do you begin to work?

(*b*) If it is fine to-morrow I shall ride to town on my bicycle.

(*c*) As I was walking over the bridge, a steamer passed under it.

(*d*) Who is to carry the bags, you, he or I?

(*e*) You may have all the apples that have fallen from the trees.

(*f*) What! Hasn't the postman (*facteur*) brought any letters for me?

(2) Translate into English:

Le roi d'Angleterre fit son entrée en grande pompe à Douvres, puis à Londres. Il avait mandé ses frères; il avait amené sa mère et sa sœur. L'Angleterre était depuis si longtemps livrée à elle-même, c'est-à-dire à la tyrannie, à la médiocrité et à la déraison, que ce retour du roi Charles II., que les Anglais ne connaissent cependant que comme le fils d'un homme auquel ils avaient coupé la tête, fut une fête pour les trois royaumes. Aussi, tous ces vœux, toutes ces acclamations qui accompagnaient son retour, frappèrent tellement le jeune roi, qu'il se pencha à l'oreille de son jeune frère pour lui dire: "En vérité, il me semble que c'est bien notre faute si nous avons été si longtemps absents d'un pays où l'on nous aime tant."

(3) Give the feminine of—*ours, oncle, épais, long, prince,* and the plural of—*mon fils, cette fleur, notre grand chien noir.*

(4) Place accents where required over the following words:—*Eleve, ane, theatre, qualite, vous futes, ils tomberent.*

(5) Distinguish between—*Aveuglement* and *aveuglément, plus tôt* and *plutôt, consumer* and *consommer, un honnête homme* and *un homme honnête.*

(6) Conjugate in full the present and future indicative of—*Jouir, mourir, prier, faire,* and *vivre.*

(7) For those only who offer "Colomba"[1] (pp. 1-26).

(i.) Translate into English:

(*a*) p. 2, ll. 10-19. A l'hotel . . . . les constructions pélasgiques.

(*b*) p. 13, ll. 6-16. Ils apprirent . . . . se coucher.

(*c*) p. 25, ll. 5-11. Eh bien! . . . . faisait allusion?

(ii.) Write notes on—*Manquer de, parti pris, Caporaux, en vouloir à quelqu'un, demeurer à.*

(8) For those only who offer "L'homme à l'oreille cassée"[1] (pp. 1-34).

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[1] The set-book is either (*a*) Merimée's "Colomba," or (*b*) About's "L'homme à l'oreille cassée." The paged references are to Fasnacht's edition of "Colomba" (Macmillan, 2s.), and to Testard's edition of "L'homme à l'oreille cassée" (Hachette, 2s. 6d.).

(i.) Translate into English:

(*a*) p. 6, ll. 19-26. Mme. Renault . . . . avant lui.
(*b*) p. 11, ll. 15-22. Léon, armé . . . . ses vêtements.
(*c*) p. 30, ll. 7-15. Vous ne . . . . viendriez vous-même.

(ii.) Write notes on—*Il eut beau protester, à bon marché, ne se brûleraient plus la cervelle, sybarite.*

Algebra.

(*Including Simple Equations, Square Root, Elementary Fractions and Simultaneous Equations with two unknowns.*)

(1) If $a = -1$, $b = 7$, $2c = 3$, find the value of

$$(2a + 3b)(2c - 3a) - 6(a + b)(b - c).$$

(2) Multiply $x^3 + 2ax^2 - a^2x + 6a^3$ by $x^3 - 2ax^2 + a^2x + 6a^3$.

(3) If c chickens are worth s shillings, and a chickens are worth as much as t turkeys, how much should be given for x turkeys?

(4) Find the G.C.M. of

$$12a^3b^2x^2y,\ 3a^2bx^3z^2,\ 9a^2b^2x^2y^2 \text{ and } 21ax^3yz^2,$$

and the L.C.M. of

$$3abc,\ 5bcd,\ 4cde \text{ and } 12cef.$$

(5) Simplify:

$$\text{(i.)}\ \frac{13x^3}{15a} \times \frac{5aby^2}{4cx^4} \div \frac{39by}{20a^2x}$$

$$\text{(ii.)}\ \frac{y}{2x} + \frac{2y^2}{3x^2} - \frac{3y^3}{4x^3}.$$

(6) Solve the equations:—

$$\text{(i.)}\ 3x - 4[2 - \{3x - 7(x-4)\}] = 2[2x + (3 - x + 2)] - 3;$$

$$\text{(ii.)}\ \frac{4x - 5}{3} - \frac{7x + 3}{2} = x.$$

(7) Out of a certain collection of books, one-eighth of the whole number of volumes are mathematical, one-sixth historical, and one-fourth scientific; the remaining 220 volumes are devoted to classical subjects; how many volumes are there altogether?

(8) Solve the equations:

$$\text{(i.)}\ 5x - 3y = 13,\quad 13x + y = 25;$$

$$\text{(ii.)}\ ax - by = a^2 + b^2,\quad \frac{x - a}{b} + \frac{y + b}{a} = 2.$$

(9). A sum of money consists of half-crowns and shillings only; it is found that if half-crowns be substituted for shillings and shillings for half-crowns, the sum will be increased by one-third; if, however, the number of half-crowns is increased by a half and the shillings reduced by a quarter, the sum is exactly five guineas. Find the original sum of money.

(10) Find the square root of

$$x^4 - \frac{2x^3}{3} + \frac{x^2}{9} + ax^2 - \frac{ax}{3} + \frac{a^2}{4}.$$

Answers.

(1) -84. (2) $x^6 - 4a^2x^4 + 16a^3x^3 - a^4x^2 + 36a^6$.

(3) $\frac{as}{ct}x$ shillings. (4) G.C.M. $3ax^2$; L.C.M. $60\,abcdef$.

(5) (i.) $\frac{5y}{9cx}$; (ii.) $\frac{6x^2y + 8xy^2 - 9y^3}{12x^3}$. (6) (i.) 7; (ii.) -1.

(7) 480. (8) $x = 2, y = -1$; $x = a + b, y = a - b$.

(9) £4 10s. (10) $x^2 - \frac{x}{3} + \frac{a}{2}$.

Euclid.

(*Book I. to Prop.* 34.)

(1) Define a plane superficies, a plane figure, an equilateral triangle and an acute-angled triangle.

(2) On a given finite straight line, describe an equilateral triangle.

(3) Draw a straight line at right angles to a given straight line from a given point in the same.

(4) If from the ends of one side of a triangle two straight lines be drawn to a point within the triangle these straight lines shall be together less than the other two sides, but shall contain a greater angle.

(5) The opposite sides and angles of a parallelogram are equal to one another.

(6) If two triangles have two sides of the one respectively equal to two sides of the other, and the angles contained by these sides equal, then shall the triangles be equal in all respects.

(7) If a straight line fall across two other straight lines so as to make the two interior angles on the same side together equal to two right angles, then these straight lines shall be parallel.

(8) Describe an isosceles triangle having each of its sides double the base.

(9) In any triangle the perpendicular from an angular point on the opposite side is less than any other straight line drawn from that angular point to any point in the opposite side.

(10) The diagonals of a rectangle are equal to one another.

PRELIMINARY OXFORD LOCAL EXAMINATION, JULY, 1900.

Monthly Test Papers.—No. 1.

THE increasing importance of the Preliminary Local Examinations of both Oxford and Cambridge has made it necessary to take into account the work of the teachers engaged in preparing pupils for these examinations. We have, consequently, had six test papers in each of the seven most important subjects drawn up by experienced teachers, and the first is printed this month. Copies of the questions in any subject dealt with can be obtained in a form suitable for distribution in class. Particulars will be found on page 35, in connection with the Junior Local Examination.

Arithmetic.

(1) Multiply ten thousand and seventeen by five thousand six hundred and seven, and express the result in words.

(2) Divide £322 3s. 11¼d. by 273.

(3) Reduce 4 tons 3 cwt. 2 qrs. 17lbs. to half-ounces.

(4) (i.) Simplify $\frac{4}{5} + \frac{3}{8} - \frac{7}{12} + \frac{11}{24}$;

(ii.) Divide the product of $5\frac{3}{4}$ and $3\frac{1}{2}$ by the difference between $3\frac{3}{4}$ and $\frac{7}{8}$.

(5) Multiply 31·17 by ·0125.

(6) Three men can do a certain piece of work in seven days; how long will it take fourteen men to do the same piece of work?

(7) Find the value of the income tax on an income of £365 15s., if the tax be 8d. in the £.

Answers.

(1) 56,165,319. (2) £1 3s. 7¼d. (3) 299,808 half ozs.
(4) (i.) $1\frac{1}{6}$; (ii.) 7. (5) ·389625. (6) $1\frac{1}{2}$ days.
(7) £12 3s. 10d.

New Testament—St. Luke.

(1) "From the beginning . . . . eye-witnesses and ministers of the word." State what you know about the history of the man who wrote this and the man to whom it was written.

(2) Write a short account of the Temptation of Jesus.

(3) "Lord, now art Thou setting free Thy servant." Where do these words occur? Say what you know about the man who spoke them.

(4) In what terms did John the Baptist announce the Messiah?

(5) Who were Anna, Elizabeth, Zacharias, Cyrenius, Herod the Tetrarch, Jesse, Tiberius Cæsar?

(6) Give the substance of John Baptist's teaching in your own words.

(7) Give an account of the first miracle of Jesus which St. Luke records.

English History.

(1603—1629.)

(1) Over what territories did King James rule—
(*a*) before the death of Queen Elizabeth;
(*b*) immediately after the death of Queen Elizabeth;
(*c*) just before his death?

(2) Write short accounts of **any two** of the following persons:—

(*a*) Princess Elizabeth (daughter of James I.);
(*b*) Robert Cecil, Earl of Salisbury;
(*c*) Sir Walter Ralegh;
(*d*) George Villiers, Duke of Buckingham.

(3) Tell the story of **one** of the following:—

(*a*) The Hampton Court Conference;
(*b*) The Gunpowder Plot;
(*c*) The Plantation of Ulster;
(*d*) The Pilgrim Fathers.

(4) Mention some of the principal points on which James I. quarrelled with Parliament.

(5) Set down in a brief but orderly way what you know about the *Petition of Right.*

(6) Describe the position of the following places, and mention the historical events which are associated with them during this period:—*Amboyna, Guiana, La Rochelle, The Palatinate, Virginia.*

English Grammar.

The tests will be arranged as follows:—I. Nouns and Pronouns. II. Verbs. III. Adjectives and Adverbs. IV. Prepositions and Conjunctions. V. Parsing. VI. Revisional. Each will also be to a certain extent general—on the lines of the syllabus.

NOUNS AND PRONOUNS.

(1) Define Common Noun, Collective Noun. State to what class each noun in the following sentence belongs:

Our neighbour, Jones, spent his last holiday among the hills of Westmoreland, where he came across a troupe of tourists whose chief occupation was art.

(2) Name the Conjunctive pronouns. What are the functions of a Conjunctive pronoun? Give an illustrative sentence.

(3) Write the plurals of—mouse, she, me, valley, phenomenon, and the feminines of—abbot, duke, earl, monk, czar.

(4) What parts of speech may the following be—stone, ill, that? Give instances.

(5) Give, in your own words, the meaning of:—

On foot the yeoman too, but dress'd
In his steel-jack, a swarthy vest,
With iron quilted well;
Each at his back (a slender store)
His forty days' provision bore.

Robinson Crusoe. Part I.

(1) On what narrative is Defoe generally believed to have founded his story? Give some account of it.

(2) Write a short life of Defoe, with special reference to his political connections.

(3) What is Defoe's account of Crusoe's youth and education?

(4) Describe the shipwreck from which Crusoe alone escaped. In what circumstances does he seem to you to have been particularly fortunate?

(5) Explain these words—assiento, ducat, spatterdashes, forecastle, equinox, calenture, fire-lock, boltsprit.

(6) Give Defoe's account of the geographical position of the desert island.

Geography.

Scheme of tests:—I. Land-formations. II. Water-formations. III. Earth-products. Political divisions and chief cities of South America. IV. Scotland. V. Italy. VI. Revisional. (The examiners lay special stress on the illustration of answers by sketch-maps.)

LAND-FORMATIONS.

(1) What is the meaning of the following? give two instances of each—one in the Eastern and one in the Western Hemisphere—peninsula, plateau, wilderness, cape.

(2) Where are—The Himalayas, The Pyrenées, Mont Blanc, The Transvaal, Klondyke, Nordkyn?

(3) How are Glaciers formed? Where are they found?

(4) Prove that this definition is not quite correct: "An island is a piece of land with water all round it."

(5) How are Capes formed? By what different names are they known? Give instances.

(6) Draw a map of Wales, marking the maritime counties, the mountain ranges, and the position of Cardiff, Bangor, Swansea.

French.

(*Set-Book, pp.* 1-11.)[1]

(1) Translate into French:—

(*a*) The boy is taking (*prendre*) a pen from his desk.
(*b*) Where does this train come from?
(*c*) Henry and I saw uncle this morning.
(*d*) Who goes there? I.
(*e*) Will you have some soup? No, thanks.

(2) Write in full the present indicative of *manger*, the conditional of *rendre* and the imperfect subjunctive of *recevoir*.

What are the present and past participles of—*donner, nourir, vivre.*

(3) Give the feminine of *cruel, nouveau, secret, le sien*; and the plural of—*le heros, le joujou, un bateau* and *bail.*

(4) Translate into English:—

Au bout d'un mois, la Barbe Bleue dit à sa femme qu'il était obligé de faire un voyage en province, de six semaines au moins, pour une affaire de conséquence; qu'il *la* priait de se bien divertir pendant son absence; qu'elle fit venir *ses bonnes amies*, qu'elle les menât à la campagne si elle *voulait*; que partout elle fit bonne chère.

(5) Answer the following questions on the words in italics in the above passage.

(*a*) *La.* Parse this word in full.
(*b*) *Ses bonnes amies.* Write this phrase in the masculine singular.
(*c*) *Voulait.* Give the first person singular of the future and present subjunctive of this word.

(6) Translate into English:

(*a*) La pauvre femme, se tournant vers lui et le regardant avec des *yeux* mourants, lui demanda un petit moment pour se recueillir.

What is the singular form of *yeux*?

(*b*) Eh bien, dit le loup, je veux l'aller voir aussi; je m'y en vais par ce chemin-ci et toi par ce chemin-là, et nous *verrons* à qui plus tôt *y* sera.

What is the present infinitive form of *verrons*? What part of speech is *y* in this passage?

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Refractive Indices of Liquids.

WE have been using with success a simple piece of apparatus for the determination of refractive indices of liquids. As the exercise may be of use to other teachers of practical physics, a short account of it is given.

A wooden box 10 x 10 cms., and 8 cms. high, is fitted at one end with a sheet of glass set in grooves with marine glue. The wooden portion is made watertight with a thin coating of paraffin-wax inside.

One strip of the glass (M) is silvered outside. A line AL is drawn in the wax to meet the mirror M at an angle of 70°.

The sighting pins P, P^1, and the object pin O are placed in the positions indicated in Fig. 1. On looking along AL, with the sighting pins in line, the image of O will appear below L. It may be made to appear to rise until it comes into line with P, P', by adding water to the box.

---

[1] The set-book is Perrault's "Contes de Fées." The paged references are to Berthon's edition. (Hachette & Co., 1s. 6d.)—This series of test-papers is primarily intended for those who offer the set-book, but by the omission of the last question the tests will be found suitable for those offering unprepared translation.

The depth of the water is now taken—a paper scale can be pasted on the outside of the glass for this purpose—and the distances LN and ON are determined. The path of the refracted ray from O to L can now be mapped out to scale.

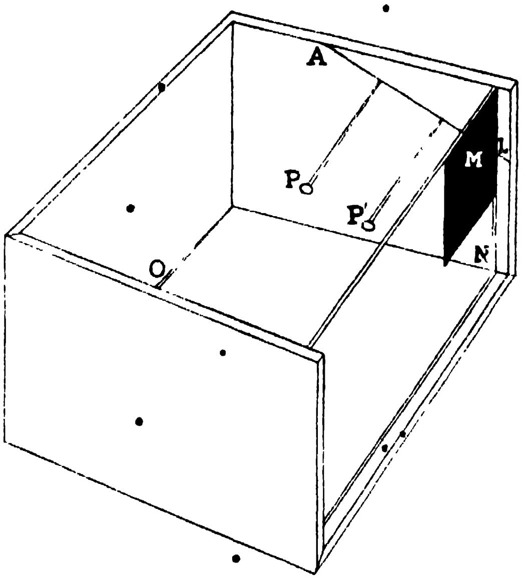

FIG. 1.

Construct a rectangle with sides equal to LN, NO, and draw a line parallel to ON to represent the water level.

Then the path of the refracted ray is given by OQL (Fig. 2) where QLR is the angle of incidence (angle of reflection, as shown by angle-line) and O the position of the object pin. By

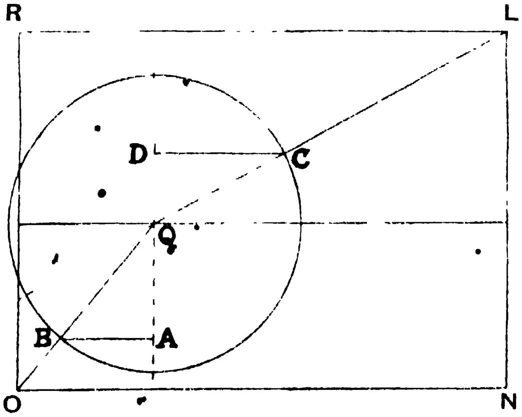

FIG. 2.

making Q the centre of a circle cutting the path at C and B, the refractive index is given by the ratio between the lengths of the perpendiculars AB and CD, AD being normal to the surface of the liquid at Q.

As economy is often a consideration, it only remains to add that an ordinary chalk box sawn in half will just take in the lid groove an old quarter plate negative glass. This forms a capital refraction box when painted inside with hot paraffin-wax. For silvering cf. Watson's "Practical Physics" (Longmans, 2s. 6d.).

Messrs. Griffin, of Sardinia Street, W.C., will supply a very neat form of the apparatus at a moderate cost.

H. WIGLEY.

Municipal Day School,
Gravesend.

Assistant Masters' Association.

I READ with great interest your remarks concerning the A.M.A. in the November issue of THE SCHOOL WORLD. I agree entirely with many of your statements, and believe with you that the Association has a high destiny before it. At the same time, I consider that the most important work before us at the present time is to draw within the fold the large number of assistant-masters who still hold aloof, and to endeavour by every means to improve our present unsatisfactory position. In most of the secondary schools there is no scheme of salaries at all. A man who begins at £100 per annum is making a fair start in life, but so long as it is impossible for him to rise above £150 (or thereabout) he cannot be expected to regard his prospects with any delight; especially, too, as his increase depends solely on the headmaster. This, however, is of far less importance than is the treatment which at many such schools he receives. At the present time our tenure depends on the whim and caprice of the headmaster alone.

At a very large day-school in London I have seen two or three masters simply harried out of the school every year because they could not adapt themselves to the many fads of their chief. Not only are men's prospects thus injured, but in some cases (I speak from personal experience) their health is seriously affected by the constant worry to which they are subjected. Under such circumstances, is it any wonder that the Branches are urged to write to the papers more frequently, or that the tendency of the Association is towards a policy which you designate as "Trade Unionist"? Until great improvements take place, we must "employ our energies on these personal questions," much as we should like to attain the high ideal which you so admirably place before us.

"TORRENS VERSUS."

London,
November 27th, 1899.

[Our correspondent is in error. It was the *Daily Chronicle* which used the expression "the germ of a trade union."—EDS.]

Over-strain in Education.

IT is a misfortune when those who are alike interested in the improvement of educational methods find themselves in opposition. "Ours is a dwarfing life, a belittling life, my brethren," and we need to avoid controversy as much as possible. Will you then permit us to state that in advocating grammatically complete answers in class we are emphatically considering boys of under twelve years of age? The habit of answering tersely and to the point is soon formed, and will not need the enforcement of a rule which would be pedantry with senior forms.

THE AUTHORS OF "OVER-PRESSURE."

OUR CHESS COLUMN.

No 13.

A BRIEF review of the part taken by THE SCHOOL WORLD in chess matters during 1899 will not be out of place. We do not claim to have introduced the game into schools; fortunately chess has, for some years now, been played by boys and girls, but we have been assured by many teachers that this column has been instrumental in securing for the game greater popularity in schools than has hitherto obtained. As far as we know, until the editors determined to start a chess column, inter-school matches were never played. We are pleased to be able to say that during the past year no fewer than nine schools have added chess matches to their other friendly engagements. Six of these are mentioned below; the others are Taunton School, Tettenhall College, and Friends'. School, Saffron Walden.

In the first number of THE SCHOOL WORLD, secretaries were asked to enter their clubs for an Inter-School Correspondence Tournament, and a set of Staunton chessmen and a suitable board were offered to the winners. At the time of going to press the score table reads as follows :—

School.	Wins.	Losses.	Draws.	Points.
Nonconformist Grammar School, Bishop's Stortford	0	3	0	0
The College, Cheltenham	0	0	0	0
New College, Harrogate	0	2	0	0
Merchant Taylors' School, London	4	0	0	4
Grammar School, Manchester	2	0	0	2
High School, Trowbridge . .	1	2	0	1

Another similar competition will be commenced as soon as the present one has been finished ; due notice will be given. Meanwhile will more readers bring this column to the notice of those of their pupils who play chess? And will secretaries let me know of the doings of their clubs? The monthly competitions will also be continued ; in addition to the prizes offered each month a set of Staunton chessmen will be awarded to the competitor who scores most points during the year. *Anybody who is at school or college during the early part of the year is eligible for this prize, even though he may leave before the end of the year.* One of the monthly prizes will be awarded to the school from which most entries are received ; this may be competed for by the members of the club in whatever way is thought best by their officers. The first new competition will appear in the February number. The prizes will be varied—pocket chessboards, text-books on chess, &c. One word of warning ; we do not want our young chess players to become "pothunters": a game of chess should be its own reward! We know one teacher who is in the habit of making his impositions take the form of chess problems, and the luckless delinquent is made to solve a two-mover if he is engaged in chess when he ought, for instance, to be learning Euclid or preparing Cæsar, &c. But we are afraid this is, in several cases, anything but a distasteful task !

Here is one of the games played in our Correspondence Tourney. (White, Manchester Grammar School ; Black, New College, Harrogate.)

	WHITE.		BLACK.
1.	P—K4.	1.	P—K4.
2.	P—QB3.	2.	P—Q4.
3.	Kt—KB3.	3.	P x P.
4.	Q—R4 (ch.)	4.	P—QB3.
5.	Q x KP.	5.	B—Q3.
6.	B—B4.	6.	Kt—B3.
7.	Q—K2.	7.	Kt—Q2.
8.	P—Q4.	8.	Castles.
9.	Castles.	9.	P—K5.
10.	Kt—Kt5.	10.	Q—K2.
11.	P—KB3.	11.	B—QB2.
12.	P x P.	12.	Q—Q3 (?)
13.	P—K5.	13.	Kt x P.
14.	P x Kt.	14.	Q—KB4 (ch.
15.	K—Rsq.	15.	B—KKt5.
16.	Q—QB2.	16.	Q x P.
17.	B—KB4.	17.	Q—K2.
18.	B x B !	18.	QR—Ksq.
19.	R x Kt !	19.	Q—K8 (ch.)
20.	R—Bsq.	20.	P—KKt3.
21.	Kt x BP !	21.	Q—K5.
22.	Q x Q.	22.	Q x Q.
23.	Kt—Q6 (dis. ch.)	23.	Resigns.

A brilliant game—on white's part, at any rate.

CALENDAR.

[*Items for the February Calendar should be sent in by January 16th*, 1900.]

January, 1900.

Tuesday, 2nd.—Return forms for Admission Examinations in Arts, Durham University.
Examinations begin for Teachers' Diploma, College of Preceptors.
Wednesday, 3rd.—Examination for Entrance Scholarships begins at Queen's College, Cambridge.
Friday, 5th.—Educational Exhibition at the Imperial Institute opened by the Prince of Wales.
Monday, 8th.—London University Matriculation Examination begins.
Diploma and Certificate Examination, Trinity College of Music, London.
Papers by members of I.A.H.M. at the Education Exhibition, Imperial Institute.
Tuesday, 9th.—Examination for Classical Scholarships at University and Oriel Colleges, Oxford.
Preliminary Examination of the Pharmaceutical Society begins.
Entrance Examination begins at University College, Liverpool.
Wednesday, 10th.—Admission Examination in Arts begins at Durham University.
Registration of Students, University College, Bangor.
Annual Meeting of Association of Headmasters at the Guildhall, E.C.
Conference of Science Teachers, Education Exhibition, Imperial Institute.
Thursday, 11th.—Conference of Science Teachers, Shoreditch Technical Institute.
Friday, 12th.—Annual Meeting of the Private Schools' Association at College of Preceptors.
Monday, 15th.—Preliminary Scientific (M.B.) Examination begins, London University.
Tuesday, 16th.—Examinations for Mathematical Scholarships begin at University, Merton, Exeter, New, and Magdalen Colleges, Oxford.
Examinations for History Scholarships begin at Merton, Brasenose, and Trinity Colleges, Oxford.
Matriculation Examination at St. David's College, Lampeter.
Admission Examination at Mason College, Birmingham.
Entrance Scholarship Examination at Whitgift Grammar School, Croydon.
Thursday, 19th.—Return forms for Second Division Clerkships of the Civil Service.
Wednesday, 25th.—Entrance Examination, Trinity College, Dublin.
Tuesday, 31st.—Return forms for Entrance and Scholarship Examinations in March at Girton College, Cambridge.

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The School World

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THE PARENT AND THE SECONDARY SCHOOL.

A PRACTICAL CONTRIBUTION TO THE PROBLEM.

By J. J. FINDLAY.

THE progress of secondary education during the last ten years has, to all outward appearance, been mainly concerned with administration and organisation, and if anyone inquires what has been achieved, we refer him to the Act of last session or to the Report of the Royal Commission.

Side by side, however, with these public reforms, or attempts at reform, more silent currents have been flowing—reforms in method, reforms in the curriculum, reforms in the intimate relationships of school life. Among the rest, a discerning eye can witness one field in which a new and more natural attitude is being gradually adopted—in the relation between parents and teachers. This attitude has for a long time been desired by writers on education, but it is only of late that practical people have come to realise the important part that the parent may be called upon to play in the problems of school in days to come.

As a sign of this new tendency, we propose to describe what is being done in a new secondary day-school recently established. The fact that the school was an entirely new foundation made it possible to discard old traditions of distrust between parent and schoolmaster; it was easy to adopt the more natural position, that the two have the same ends in view and should co-operate in all possible ways to promote these ends. The parent recognises the immense influence of the form master and house tutor over his boys; the teacher recognises the parent not as a superfluous or interfering factor in the course of education, but as a co-worker who has, indeed, far more responsibility and interest in the welfare of the individual pupil than the school can claim to possess.

The idea underlying the plan here described was taken from the *Eltern-Abende*, in which the present writer took a share when a student in the *Pädagogisches Universitäts Seminar* at Jena. The parents of the boys in Professor Rein's little *Uebung's Schule* are accustomed to meet the staff for an evening once or twice a term, and the success of the arrangement was so pronounced that it seemed worth while to see whether the same principles could be applied in a large English school. Invitations, accordingly, were issued by the house tutor and members of one of the "houses" (the reader will see below what this organisation is) to all the parents, and they were received with a cup of tea or coffee, being waited upon by the boys of the house. Some of the work of various Forms in drawing, carpentry, &c., was to be seen, also books, pictures and the like presented by friends of the school. Presently music and recitations followed, mainly contributed by the "house," which acted as hosts for the evening, but assisted, especially in music, by boys belonging to other houses. All the staff were present, but no boys were there, except the members of the "house" in question, and the few specially called in to help the proceedings. After the programme was completed the boys retired (not unwillingly, for their elders had not consumed *all* the cake and biscuits!), and the headmaster gave a short address. These addresses have dealt with practical topics, relating either to the organisation or the aims of the school, and they have been followed by a little discussion. A summary of one of these addresses will serve at the same time to explain the meaning of the "house" system referred to above. The title taken was—

THE CORPORATE LIFE OF SCHOOL.

The house system was explained as a necessary feature in the organisation of a large school society, if they were to aim at the highest educational ideal. This ideal, in one word, is character. Beyond all subordinate aims, such as those of commercial or technical or athletic education, there lies the supreme duty—to aid boys to grow into good habits of virtue. This cannot be done alone by the school, for the family and the church take the chief responsibility; but the school has *some* responsibility in this matter. It arises from the situation presented by the life of the school society. (1) The boy is placed year after year, day by day, in the midst of these school influences, and he cannot escape being powerfully moulded thereby in every feature of his disposition. (2) The boy is gregarious, he loves his kind; he must associate with companions of his own age, he cannot be rightly confined to the circle of home. (3) The boy is active, incessantly active. When allowance is made for lesson times, meal times and sleep, there is still a large margin of the day during which adults are willing to rest and pause, but which the child prefers to employ in spontaneous activity.

These three facts constitute the *raison d'être* for the house system. It provides an organisation adapted to the social needs of young people, guiding their active pursuits in games and other out-of-door employments; and, above all, gives opportunity for *esprit de corps*, for self-denying devotion to a common cause, which is the best augury for good citizenship and patriotism in later years.

Experience has shown that if these facts in the organisation of a large school be neglected, boys who are growing up to be young men incur grave perils—perils due largely to the immense size of our modern cities, and to the manifold temptations which these offer. Habits of luxury and idleness can only be anticipated by giving generous opportunity for activity, not only in books and studies, but in all manner of healthy and worthy pursuits.

A boy trained in such an atmosphere comes to realise that he has a duty to his school; he takes some pride in its successes. It is not only a place from which he gets instruction, but a public institution to which he himself contributes his share of aid; he is, in short, a member of a society. As he becomes older he finds himself a leader among his comrades, and has then to exercise the qualities of leadership and control. Such qualities are as much needed in commerce and manufacture as those branches of knowledge which we call "technical."

School games naturally take an important place in the life of a "house," and we must admit the necessity on the one hand of repressing the tendency to excess in the glorification of athletics, on the other hand, the necessity for every boy to take his regular share in these vigorous out-door sports, unless prohibited by doctor's orders. Parents should give special attention to the matter of changing into play-clothes; the change ought to be complete, and to include the underclothing. After the game boys should get home at once and remove the play-clothes.

It will be seen that a frank discussion of this kind greatly helped in getting the parents into a friendly attitude with reference to compulsory attendance on Games afternoons. Doubtless a strong school can force its regulations on parents and override their wishes, but if the aim of education be to achieve a complete character, the school must be not only strong, but kindly and considerate.

Another topic discussed on such an evening was: The aims of a secondary school as preparing boys for their subsequent career in life. Schoolmasters will at once recognise its importance in relation to the difficulties which beset every school. The proper age for leaving school, and herewith the problem of differentiation; the antagonism between liberal and technical aims; the need for special classification of boys in the higher forms, came into this discussion. The practical result was that parents saw that the school could only to do its proper work as a secondary school if the pupil remained until sixteen years of age or beyond.

We may briefly sum up the principles underlying the Parents' Evening as follows:—(1) It gives parents a fair chance of seeing and hearing what their boys do at school; the exhibits, the music, the recitations, and so forth, are drawn from the *ordinary pursuits* of school lessons, and ought not to go beyond that range. A parent has a right to have this knowledge; we cannot admit him into our class-rooms, but he can see on such an occasion all that he needs. (2) It enables the staff to get to know a little of the parents. A good school must be strict in discipline, in spite of parental indulgence; now friction is minimised if the parents once and again see those who handle their boys, and recognise them as human beings rather than pedants. It is not every schoolmaster that likes the process; many who are most happy in a boy's society fight shy of his mother! But if a school is really to be recognised as a corporate society, the home must not be utterly ignored, even by studious young bachelors. (3) It gives to all concerned in house life an illustration of what the house system means. In the boarding-school this is unnecessary, for a boy lives in his house and his house tutor acts *in loco parentis*. But the "houses" of a day school, as first planned by Dr. Percival when at Clifton, are merely a copy of this plan, and are not understood by parents at first. (4) It affords the boys of the house a special opportunity of practising the art of courtesy and service; they realise that the school belongs to them, and that they have some share in displaying its doings to its elders. (5) Finally, the parents' evening enables the headmaster to treat of any matters which are of importance at the moment. Notices and circulars do not explain everything, and a frank account of aims and methods brings parents into real sympathy with the teacher.

When the plan was proposed, the cynic declared that this was a delightful theory, but that it might, perhaps, break down if the parents did not turn up! The cynic was not a parent, and could not apperceive parental sentiments. As a matter of fact, there is a wide and deep interest in education spread all over the country, linked with the manifold interests in socialism, philanthropy and religion, which are a feature of the present age. No doubt the plan would fail if such gatherings were held frequently. Even schoolmasters are not everywhere found eager to attend discourses *Ueber Pädagogik!* But an address once or twice a year, apart from prize-givings and public displays, is welcomed by the great majority of parents, and the keen interest exhibited by some would compensate the teacher for labour far more arduous.

Relation of School to Home.—The headmistress in many schools sets apart certain hours for seeing parents; could it not be arranged that each class teacher should have some free time for seeing parents of her pupils, especially at the beginning of a new year? There is much to be said against evening visiting, and ordinary social meetings would be useless for the purpose of discussing difficulties. It is a great matter to substitute candid discussion for fault-finding to third parties. We shall not always agree, but we shall learn to respect one another's opinions, to understand one another's difficulties, and to work more effectually with one another in the difficult, sacred task committed to us. So far from finding parents generally anxious to interfere, I have difficulty in persuading them that I earnestly desire they should tell me of anything that needs attention.—Dorothea Beale, "Work and Play in Girls' Schools." (Longmans.)

SET BOOKS IN FRENCH FOR THE OXFORD LOCAL EXAMINATION IN JULY, 1900.

By PROFESSOR WALTER RIPPMANN, M.A.

SET BOOK *versus* UNSEEN TRANSLATION.

THE only advantage claimed for the setting of books for an examination is that in this way candidates are forced to read at least one book from beginning to end. The chief disadvantage has often been pointed out: the teacher is no longer free to choose what is really best for his pupils, nor can he vary their reading, which might otherwise appear advisable.[1]

A book suitable for boys is often far less attractive to girls, and *vice versa;* frequently the girls are forgotten altogether, both by examining bodies when they set books, and by editors when they annotate texts. It is only by accident that they ever get a special chance; as when, a few years ago, in a French grammar paper the question was asked: "What is the difference between *le rose* and *la rose?*" Roughly speaking, 60 per cent. of the girls knew *le rose*, and only 10 per cent. of the boys.

The set book is often too long to be read in a single term, especially as the term is curtailed by the time which has to be set aside for the examination. I shall not here raise the question, whether—in the case of the lower and middle classes—it would not be better to dispense with examinations altogether. If they are intended to test the pupils and place them in order of merit, that surely can be accomplished much more satisfactorily by taking into account the work of the whole term. If, on the other hand, such examinations are meant to test the teaching, that is done far better by watching it in process rather than in its results.

If the class is kept at the same book for more than a single term, the interest cannot be sustained; the interval of the holidays causes a breach in continuity which is not good. Boys may be moved into a higher form at the end of any term, not at the end of the year only, and new pupils enter the school at various times. This fluctuation is a further argument against "splitting" books. The term's work undoubtedly gains very much in educative value if it is so arranged that in each subject there is a well-marked step forward, a clearly defined task.

Such considerations have induced the authorities responsible for framing the syllabus of many a public examination to let candidates offer unseen translation in place of a set book; and a teacher is then free to choose texts in accordance with the particular interests and faculties of his class, and maybe to abridge a text in order to get through it in a term, instead of leaving the story half told.

If "Juniors" are to be examined at all, then a careful teacher will, as a rule, choose the alternative which leaves him greater liberty, viz., unseen translation. But there are many who still prefer a set book, under the impression that they can then make more sure of their results. To these I venture to offer a few suggestions as to the preparing of a set book with a "middle" class, suggestions which may also prove useful to those who send their pupils in for the unseen translation.

THE BOOKS SET.

The French texts set for the next Oxford Junior Local Examination are Mérimée, "Colomba," and About, "l'Homme à l'Oreille Cassée." There can be little doubt which is the better book from a literary point of view, and About's novel is half as long again as "Colomba."[1] Most teachers are already familiar with this book, and I expect the majority will select it. I shall therefore assume that we wish to read "Colomba" with a class, so that they may derive as much benefit as possible, and be in a position to pass the Junior Local in July. I assume that they have been learning French for at least two years, and have a knowledge of the elements of accidence, including the most common irregular verbs, some idea of the main rules of syntax (*e.g.*, simple cases of agreement of past participle), and a fair vocabulary of common words. For my present purpose I do not assume that they have acquired any such power of handling the foreign language as would result from the method advocated by me in a series of articles contributed to the first six numbers of THE SCHOOL WORLD. The children have three lessons of one hour each in the week.

The text has been well edited by Mr. Fasnacht (Macmillan) [and by Mr. Ropes (Pitt Press Series)]; the references to this edition are in square brackets. It runs to 154 [132] pages, which is enough for two terms, if the reader is to be made the centre of teaching. As we proceed with the reading it will gradually go more quickly, for many words unfamiliar at their first appearance recur again and again; but there is less time available for teaching in the summer term, and we must allow for a general revision before the examination. We shall therefore be not far out if we take pages 1-88 [72] in the Easter term. We may read 6½-7½ [5½-6] pages a week at first, and slowly raise the amount to ten [eight] pages as the children become more familiar with the vocabulary and style.

NOTES ON THE READING OF A FRENCH TEXT IN CLASS.

Introduction.—When the French class meets for the first time after the holidays, there is usually some routine work to be dispatched; but there will be plenty of time for an introductory talk. The teacher will tell his pupils something about the author; he will point out what led Mérimée to visit Corsica. The pupils will be asked what they know about this island, the position of which they will show on the map which hangs in the class-room. The teacher will supplement their knowledge, particularly with regard to the people who dwell there. In this connection he might tell them something about Napoleon, especially as there is an allusion to him at the very beginning of the book. A few remarks about the *vendetta* will also interest the children and prepare them for what is to come. It need hardly be added that pictures should be introduced if possible. To get one of Napoleon should be easy enough; I do not know of any picture of Mérimée that is accessible; but photographs of Corsican scenery are not hard to get, and will materially help to suggest the foreign "atmosphere."

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[1] The above was written before the Annual Meeting of the Modern Language Association, at which Mr. Siepmann's motion, "that set books prescribed by an outside authority should be abolished in all external school examinations in French and German," was agreed to unanimously.

[1] In writing this article, I used the Pitt Press edition, which I now find is incomplete. The difference in length between the books set is, therefore, not as great as I thought.

The three weekly lessons may be arranged as follows:—

First Lesson.—The papers which have been corrected by the children in class and by the teacher at home (*see* "Third Lesson," below) are returned. It may be necessary to make some remarks about certain of the corrections, in order to clear up misconceptions, the existence of which has been shown by the mistakes made. When the teacher has distributed the papers, the children are told to look at the corrections and then to read on in the book He then explains the various points raised, using his own discretion whether the matter is of sufficient importance to be told to the whole class. As a rule he will prefer to speak to the one child only, for he does not wish to discourage any child by drawing general attention to the mistakes it has made, and he also avoids dwelling on what is wrong, because he would thus incur the obvious danger of suggesting a possible way of making mistakes, which might otherwise not have occurred to the other pupils. When he is satisfied that all clearly understand their mistakes, he will proceed to let them translate from 3½ to 4 [2 to 2½] pages of unprepared text. This will enable him to lead the children to attack difficulties instead of shrinking from them. Unless they have already learnt to fight their way, they are inclined to show the white flag before making any genuine attempt to conquer what seems to bar their progress. Before translating a sentence, however, the teacher reads it in French: he then asks a pupil to read it also, and another pupil translates. This device secures the attention of the rest; for when they know that the one chosen to read will also be called upon to translate, they will pay less attention to the reading. The teacher will not explain difficulties if he can lead the pupil to find out the meaning for himself. He will encourage sensible guessing, commending a guess which, even though not exactly hitting the meaning of a word or phrase, shows thought, and condemning anything in the nature of a "wild shot." When the sentence has been translated (if it be really difficult, another pupil—and preferably one that is weak—may be asked to translate it again), a few questions on the grammar are asked. Now and then the teacher will himself translate a few sentences; slowly, so that the children can readily follow.

About 4 [3] pages (rather more later) are set for the next lesson, and the time that remains is given to the explanation of such words or passages as are likely to prove difficult, and are not explained in the notes.

Thus in the first lesson, p. 1, l. 1, to p. 5, l. 4 [to p. 3, l. 21] might be taken unseen, and from there to p. 8, l. 9 [p. 6, l. 14] set for preparation. The words *emballer*, *parrain*, *se charger de*, *avoir envie de*, *il s'agit de*, *casquette*, *un ton dégagé*, might be explained; the teacher knows best what words and phrases are not known or not to be guessed by his pupils. The passage p. 6, l. 21-31 [p. 5, l. 4-13] is difficult; it might be omitted in the preparation, the teacher translating it himself in class. Pupils at this stage cannot be trusted to produce a good rendering of a hard passage; and a poor rendering is positively harmful. It must always be impressed upon the pupils that they are not only to represent the meaning of the French, but to express it in perfectly natural English. It is unfair to ask them to put into good English what requires some thought even in the case of those who are well versed in the two languages.

It will be inferred from what I have said that I am not an enthusiastic believer in the educational value of dictionary thumbing in the case of beginners. Weak pupils, it is generally conceded, derive no benefit from it, as they usually accept the first meaning that presents itself. And the time spent by good pupils in searching for a suitable meaning would be spent far more profitably in reading. One of our objects is to teach the pupils to read for themselves; and it must therefore be made a rule that as far as possible they shall make out a text without any help beyond that which the teacher has supplied in the way suggested. Of course there is no objection to the use of the little *Larousse*, which, at any rate, the abler pupils might be asked to buy.

Second Lesson.—The pages set at the last lesson are now translated, in a manner similar to that outlined above for unseen translation, but more quickly. Occasionally the teacher may select a dozen lines or so and let all the children translate them in writing; this is useful for testing their diligence. They have only the plain text before them. (No renderings are written in the book itself; such notes and explanations as the teacher wishes to be preserved being taken down in a separate notebook.) The teacher can at once tell whether the work has been carefully prepared; if a pupil is playing with his pen, or leaves blanks, there is something wrong. When all but a few stragglers have finished writing, the teacher calls on one or several to read the translation; he may like to ask for the renderings of some whom he suspects of idleness, but there is of course no need to collect and correct all of them.

About 8 [6] pages have now been read, and a paper is set. Taking the early pages of "Colomba," questions such as the following occur to one. I have purposely put down more than a teacher would like to set, because I wish to give specimens of various questions which might be asked. The teacher will prefer to insist on particular points in different papers, according as the work of his pupils shows what is giving them difficulty. The questions should, of course, be such that they can answer them unaided; and it should be made a strict rule that they are neither to give nor to receive help.

French questions, to be answered in French:
Où est la Corse? Qui est-ce qui était un voyageur mécontent? Le colonel était-il content de la chasse en Italie? Où est-ce qu'on mange la bouillabaisse? Qui est-ce qui a peint la Transfiguration? Est-ce que Napoléon est aimé des Corses? Le Caporal était-il un homme sans éducation? Où le Caporal était-il né? Nommez le patron de la goelette!

Give the infinitive and perfect (3rd singular masculine and feminine) to *prennent, voyait, il s'enquit.*

Give the 3rd singular present indicative and imperfect subjunctive to *venait, irons, faisant.*

Supply the preposition in the following sentences:—*Il l'invita—dîner; je suis charmé—l'avoir; j'aimerais—y passer une semaine; je suis obligé—lui parler; je me propose—découvrir cette île; j'ai envie—y aller.*

Substitute the correct form of the past participle for the infinitive in the following sentences:—*L'Italie avait (ennuyer) sa fille; sa fille, qu'avait (ennuyer) l'Italie; une histoire, dont on les avait (entretenir).*

Place the definite article and some suitable adjective before the following words:—*Navire, voile, mérite, fois.*

Explain the subjunctive in the following lines: 4, 10; 5, 4; 5, 18; 6, 8; 7, 31; 8, 1 [2, 25; 3, 21; 4, 6; 4, 24; 5, 33; 6, 6.]

What three meanings of *passer* occur in these pages? Mention any peculiar use of *sien*. How does *une quinzaine* come to have its meaning? Give the French for: "I have just done it; I am going to do it; I came to fetch him." What is the French spelling of the words meaning "adjutant, bivouac, breeze"? Explain what is meant by: *chasseurs à pied de la garde; la garde nationale; un caporal; un éloge en trois points.*

Third Lesson.—The papers are corrected by the pupils in class, particular attention being given to the grammar; they are then collected by the teacher, who will take them home and correct where necessary, marking any mistakes which he wishes to explain in the next lesson (*see* "First Lesson," above). The remainder of the hour may be given to dictation, a passage being chosen from what has already been read, or, at any rate, one which contains no unfamiliar words. Or a passage in the book (if possible, that immediately following what has last been read) is set for unseen translation. While this is proceeding, the teacher does not remain at his desk, but moves about the room. Why should the boys in the front row always be at an advantage when he is dictating?[1] And when unseen translation is being done by the class, the child that is in difficulties will raise the hand, and he can give it a little help in a low tone of voice, without giving that help to those who do not need it, and are indeed better without it. Neither the passage for dictation nor that for translation should be long; sufficient time must be left for careful correction in class. As a rule, there will be no need for the teacher to take this written work home for further correction; occasionally he may wish to take a few of the papers home, for the reason already mentioned.

Simple poetry may be given with advantage in these "third lessons," and the children might learn a few lines as home work. They require to be told that the poetry must not be merely whispered when they are learning it, but distinctly spoken. Here they will derive benefit from the home circle, if mother or sister know French well and the child repeats its poetry to them.

It will be noticed that I have said nothing about translation from English into French. I feel so strongly that this is out of place in the early stages of learning a language that I am unwilling to give any hints how this should be done. Teachers who attach importance to it, and do not believe in free composition as a preliminary stage, will find no difficulty in making up sentences from the text for purposes of retranslation, which has found a warm advocate in Mr. Siepmann, and for specimens of which I need only refer to the appendices to the various volumes in his popular series.

For those who are tired of "Colomba," and choose About's novel, there is a convenient edition, recently published by Hachette, and well edited by Prof. Testard. It can obviously be treated in just the same way as that suggested above for "Colomba," with this important difference, that the class must get through ten pages a week; and that seems to me more than can be done in three hours, unless all else is neglected for the sake of translation pure and simple. It is better, I think, to choose "Colomba"; and best of all, I am sure, to choose unseen translation.

The Place of Grammar.—Teachers will find it convenient to frame for their own guidance an elementary course of grammar corresponding to the curriculum of each of the first two years. Within this period it will be found possible to establish, with the co-operation of the class, all the most essential grammatical facts. This process will be greatly facilitated if the class has previously acquired an intelligent grasp of the principles which underlie the grammar of the native language. . . . . The most convenient grammar would be one written in the foreign language, with special reference to the needs of English learners.—Professor Spencer in "Aims and Practice of Teaching." (Cambridge Press.)

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[1] It is hardly necessary to remark that the teacher will only speak when he is standing still.

PIONEERS IN EDUCATION.

By Foster Watson, M.A.
Professor of the Theory and Practice of Education in the University College of Wales, Aberystwyth.

II.—Some Practical Views on Education of John Dury (in the age of Cromwell).

According to Dury, there are four sorts of schools necessary for the well-ordered commonwealth:

(1) The vulgar or plebeian school.

(2) A school for the gentry and nobility (whereunto also the most gentle spirits of the vulgar ought to be received).

(3) A school of *the masters of human and natural perfections.*

(4) A school of the prophets, who are employed about divine and supernatural perfections.

John Dury means by the last-named two schools training colleges for teachers and for ministers of religion. He himself points out that if these schools, "wherein the education of those who are to teach others human and divine knowledge can be rightly ordered and constituted *in this our age*,[1] the other two former in the next generation may be wholly rectified, and when these are effectually reformed, then in one age more the body of the nation will find (by God's blessing) the fruit of those endeavours."

So writes Dury in a "Seasonable Discourse" (1649). In the following year he published his "Reformed School," where he lays down in detail his views on school education. To that book Mr. Samuel Hartlib wrote a preface of appreciation, and his words concerning the training of teachers not only support Dury's views, but also excellently represent the spirit of the best educational thought of the Cromwellian era. Mr. Hartlib says, in words that deserve to become classical: "But because the training up of scholars in one school or two, though very great and most exactly reformed, will be but an inconsiderable matter in respect of a whole nation, and have no great influence upon the youth thereof, where so many schools remain unreformed and propagate corruptions; therefore the propagation of reformed schools is mainly aimed at; and to that effect the training up of reformed schoolmasters is one of the chief parts of this design. Now, to endeavour to make this out, that the readiest way to reform both church and commonwealth is to reform the schools of education therein, and that the way to reform those is to send forth reformed schoolmasters amongst them, is, as I suppose, altogether superfluous. For it cannot be thought that any rational man should be such a stranger unto the affairs of human societies as not to see that from the ordinary schools all magistrates and ministers and officers of State are taken throughout the nations of the world to be set over others; and that the impressions both of vice and virtue which they have received in the schools are exercised and become effectual, for good or evil afterward, in their places towards the church and commonwealth: so that the schools are to be looked upon as the ordinary and natural fountains of a settlement, as of our corruption, so of our reformation, if God will bless us with any. And the schoolmaster in a well-ordered commonwealth is no less considerable than either the minister or the magistrate, because neither the one nor the other will prosper or subsist long without him."

Dury would have a school in the hands of an association of "free" persons who agree to live together for "edification"—and to engage in good works. Amongst other employments Dury thinks it would be fitting for the associates to engage in "handiwork and tradings proper to either sex, which may become a relief to the poor." These associates are to act as "tutors" to the children of the school. At the head of all associates, "ushers" and children, is the governor. There are to be from fifty to sixty children in a school; for the teaching of these, three ushers are to be engaged, to be employed as above stated, under the governor. The ushers are to be provided with all outward things necessary, *e.g.*, lodging, food and raiment, "without *cost or care*," and although Dury does not mention the question of salary, from the general tenor of his treatise it is clear that the ushers were to be well paid. The governor is to give every direction in writing, and to explain his actions, if called upon by the associates.

In the last article I showed that Richard Mulcaster explicitly suggested the establishment of training colleges for teachers. In the "Seasonable Discourse" we have seen that John Dury urges a school for masters. But it is very interesting to note that in his "Reformed School" he appears to contemplate the training of teachers in connection with each well-equipped reformed school. The following are his suggestions for the giving of lessons:—

The governor is to prepare a syllabus of work and to give it to the ushers, "that they may be in full readiness and perfectly exercise themselves in everything which they shall deliver to their scholars, and the matters should be thus long predetermined beforehand and given to the ushers, that if upon good grounds they shall suggest anything to the governor for an alteration of that which he shall have prescribed, it may be in time considered between them and ordered as need shall require, or found most expedient."

Such are Dury's views as to preparation, co-operation and consultation of head and assistant. But how many headmasters would even to-day be prepared to recognise as part of their duties the remainder of Dury's directions? "The matters," he continues, "to be proposed (to the children) being thus prepared, when the time comes to offer them to the scholars, the governor shall for every different kind of exercise and institution give directions unto the ushers how to behave themselves towards the scholars, to make them affectionate towards the task which is to be offered unto them, that is, attentive and greedy to receive it, and to make them more perfect in following the directions and rules which in this nature shall be given. *He shall himself give an example of the practice of it towards the children, showing them at every change of exercise and different way of institution how they shall go about their work. He shall therefore teach the first lesson of every kind himself in the presence of his ushers, that they may observe his way, and at the second lesson, when they shall begin their work, he shall be present at it, to observe them, how they perform it, and tell them of their faults, if any be committed.*"

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[1] Italics mine.

Boldly, therefore, Dury has stated his opinion as to the relations between the head of a school and his assistants. Striking as the idea is in a man writing in 1650, and trenchantly as is Dury's statement of it, I have never seen this passage transcribed. In view of the registration of teachers, and the necessity of training the future teachers of the secondary school, it deserves to stand out as Dury's Method of Training. At any rate, whether training be in training colleges, or in schools under heads who instruct their assistants in the practice of teaching, Dury points out the value of "specimen lessons" and of "criticism lessons." To have emphasised the need of training colleges for teachers, and to have mentioned as desirable methods which have taken a recognised place in training, shows an insight into educational practice which justifies the selection of Dury as a representative of Cromwellian thinkers on education.

The three outstanding names of the period are John Amos Comenius, Samuel Hartlib and John Dury. Of the first, it is sufficient to say that he was by far the best known. His fame spread throughout Europe, and he was invited to come over to England, with a view to introducing his ideas on education, probably by the establishment of a college. He was even invited to New England. Professor Laurie has, however, written fully on him in his account of the "Life and Work of Comenius," published in the Pitt Press Series. Samuel Hartlib is best known by the fact that John Milton wrote his magnificent "Tractate on Education" to him. Hartlib was a man of affairs rather than a writer. Milton did not regard the problem of education from the schoolmaster's point of view. He was not "practical," and although, if we had to choose, we would rather lose a vast amount of writing on what is called practical education than be without the tractate, yet John Dury, with a plan and method for a reformed school, stands as a typical exponent of a school education in which theoretical and practical considerations are conspicuously combined in a degree to which Milton's tractate cannot claim to attain. Further, the views of Comenius, Hartlib and Dury have a special claim to stand together, and to be illustrated by the quotation from any one of them. For in Dury's pamphlet, "A Motion Tending to the Public Good," Dury expressly speaks of a mutual understanding between the three—Comenius, Hartlib and himself. He declares that, through "love of 'such' objects (*i.e.*, of education), we are put to a non-subsistence—I mean Master Comenius, Mr. Hartlib, and myself; for, though our tasks be different, yet we are all three in a knot, sharers of one another's labours, and can hardly be without one another's help and assistance." And again, in his letter to "a worthy knight," replying to some suggestion, he says, "I will propose the matter to Master Comenius and Master Hartlib, to whom I have not as yet spoken of this particular, for we are bound to do things with mutual advice."

By far the greatest force in the educational literature of the Commonwealth was the philosophy of Lord Bacon. Negatively, he had emphasised the necessity of counteracting the prejudices which beset the mind as *idola;* positively, he had demanded the discovery of a new intellectual world which might vie with the new physical world of America. Such a new world was to be discovered through experience, by the methods of observation and experiment, and elaborate induction. This led, naturally, to the idea of the training of the senses. Comenius, therefore, urged: "Leave nothing until it has been impressed by means of the ear, the eye, the tongue, the hand."[1] So, too, Dury is equally imbued with the notion of teaching by means of the senses. In the earliest period of education, *i.e.*, before eight or nine years of age, the child is to be encouraged "to take notice of all things offered to his senses, to know their proper names, to observe their shapes, and to make circumstantial descriptions thereof by word of mouth, *and painting in black and white.*" In the second stage of education, from eight or nine to thirteen or fourteen years of age, children are to be exercised "in observing all things natural and artificial extant in the world, whereunto their imagination shall be led in a certain method to cause them to reflect orderly upon them and observe them in their several kinds, coherences, differences, parts, actions, properties, uses and references unto man by trades and manufactures. In the third stage, from thirteen or fourteen to nineteen or twenty, the things which are to be taught them, and wherein they shall be exercised, are all the useful arts and sciences which may fit them for any employment in church and commonwealth. Here, then, all the means of traditional and rational learning are to be both included in Dury's reformed Schools.

Dury recognises the need of a study of languages, but not so much for the discipline in knowledge of accidence and syntax and composition, not so much for æsthetic and culture results, as for the "solid matter" in classical and other authors, on the sciences, the foundations of which have already been learned through the lessons founded on sense-experience. This is the point of view of Comenius, and, to a large extent, that of John Milton. Indeed, the Commonwealth writers, as a whole, regarded the classics very much as containing authorities of great importance for consultation in special studies, as the storehouse of the accumulated knowledge of the past, and as the means of communication between scholars of the present; so that, as Professor Laurie says, in speaking of Milton, the classical languages were to them, in this point of view, what the modern languages are to us.

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[1] See Laurie's "Comenius," p. 95.

The sciences and languages are to Dury the great subjects for teaching. But he has clearly grasped the principle that these subjects are to be accommodated to the capacities of the child. How this is to be done, Dury declares, depends upon experience, if the manner of doing is to be brought to perfection, provided always that it be "prosecuted" in consonance with the maxims and rules developed by educational thought. Further, "all tasks are to be performed on all hands, both by those that propose and those that receive and entertain learning, in a readiness and *ordered for use.*" With Comenius and Milton, Dury wants education to be encyclopædic. It is the bounden duty of schoolmasters to endeavour to make the manner of learning easy and delightful.

Girls are to be taught as well as boys. "The ordinary vanity and curiosity of their dressing of hair and putting on of apparel, &c., &c., shall be changed by our course of education into plain, decent, cleanliness and healthful ways of apparelling themselves, and into such exercises of their hearts, heads and hands which may habituate them, through the fear of God, to become good and careful housewives, loving towards their husbands and their children . . . . And such as may be found capable of tongues and sciences (to perfect them in graces and the knowledge of Christ) are not to be neglected, but assisted towards the improvement of their intellectual abilities."

Did Dury advocate the idea of universal education? Surely he did. His plebeian or vulgar school was the analogue of our elementary schools. In his "Seasonable Discourse," he says, "The end of scholastical education is to fit *everyone* for the industry and employment whereunto, by reason of his birth, he may have a right, or by reason of his natural parts, he may by others be called, or of his own accord lawfully apply himself."

In one of the British Museum MSS. (Additional MSS. 24, 863, p. 80), it is stated that at one period Dury was sent to Winchester "to reform that place," and that thence he was called "to be about the king's children." At Winchester he apparently gave some lectures in 1646, on the exercitation or practice of schooling. The notes of these lectures are still to be read in the Sloane MSS., No. 649, p. 52, *et seqq.* As to schoolmasters, one of his notes runs:—

"Schoolmasters *must be fitted and enabled to go about the work.*"

As to schools, another note reads:—

The schools should be public, and of two sorts.

(1) *Common to all.*—Teaching in their mother-tongue the right notions, names, expression of things.

(2) *Peculiar to some.*—(i.) For the tongues (*a*) of learning, Hebrew, Greek, Latin; (*b*) of Commerce, French, Spanish, Italian. (ii.) For the arts and sciences, whereby the vulgar are to be fitted for their employments in the commonwealth.

Whosoever will consider the case of John Dury will see that his proposals were mainly the same, or very similar, to those which to-day we term "eminently practical." How plaintive is that declaration already quoted: that for "love of such objects, through neglect of ourselves, we are put to a non-subsistence—I mean Master Comenius, Mr. Hartlib, and myself"!

LEISURE-HOUR PURSUITS IN BOARDING SCHOOLS.

By Frederick Andrews, B.A.
Headmaster of Ackworth School.

IN schools of repute it is now universally recognised that, in the training and development of character, games and leisure-hour pursuits play an important part. How to organise and direct these amongst boys without destroying the power of initiative is one of the problems which we have, at Ackworth School, a large boarding-school belonging to the Society of Friends, striven to solve. In addition to voluntary help given by masters in subjects in which they are particularly interested, we have a master highly trained whose duty it is to oversee leisure-hour pursuits, encourage boys in hobbies and aid and abet the class masters by maintaining a healthy tone of manly independence during out-of-school hours. It is a mistake to suppose that all boys will play or that all boys will find occupation. Some are born "tired." As under the old Poor Law there used to be generations of paupers, so there are hereditary loafers. I have known a parent reply to a remonstrance as to the shiftless character of his boy who would spend his playtime sitting idly about: "Oh! it's all right, he takes after me, I always did the same."

Now, it is all-important that such "ease in Zion" should be disturbed, and yet persuasion is far better than force. With regard to games, the spirit of the school, backed by occasional forcible reminders from prefect or captain, will usually accomplish this end. With regard to indoor pursuits, it is the business of the special master to provide a varied and tempting bill of fare, to encourage freedom of choice, but to insist, in Carlyle's words, "that every man must find his work and do it."

We read in olden time of Gallio, who, in a time of great excitement, "cared for none of those things." The modern Gallio is not unknown amongst schoolboys. I am writing on a Saturday afternoon in December; darkness has fallen early over the scene, 180 boys have two hours of leisure before them. The problem is how shall this time be pleasantly and profitably spent. Let us make a round of the premises. In a large and commodious workshop lighted by electricity are some six or eight boys, a practical joiner is within call, but the work this afternoon is voluntary. Here a bookcase is being made, there a beginner is trying his hand at a wooden coal-box, an old hand is completing a Davenport. Next door, where classes of joinery are held, a few boys are practising carving, again under skilled assistance, but from their own designs.

Let us step into this class room. We see four boys absorbed with pen and pencil; on enquiry we find they are writing up archæological notes and finishing sketches made during the long summer days as they visited interesting old churches found within a radius of ten miles of the school. Merry voices attract us to the lavatory. Here are willows, which after being softened in the water, are formed into chair or table, intended as a Christmas gift at home. A studio, round the walls of which hang the best pieces of work of previous years, finds occupation for a few. A comfortable, well-furnished reading-room attracts some of the older boys. A light in a cellar reveals some three or four engaged in clay-modelling; a group of young boys in a class room employ their fingers in knotting wool mats and hearthrugs, whilst a companion reads a stirring tale of flood and field. The natural history room, two months back in great demand, is almost deserted, though one or two boys are examining the chrysalids carefully preserved, or are writing up their diaries.

From the lecture hall we hear strains of music. Here the string band are practising for the Saturday evening entertainment, when in a homely fashion budding talent is encouraged in music, recitation and song, with a boy-president — the controlling hand is there, but in the background. The gymnasium has its contingent, and in a large common room are the remainder, some reading, some practising shorthand, which is not a class subject; some engaged, it may be, in a chess tournament, all healthily employed.

It is important in many of these voluntary occupations that skilled assistance should be available to direct and show the way out of difficulties, so as to prevent discouragement and waste of energy; but this help, to be efficient, must develop resourcefulness and independence in the boys themselves.

The above is no fancy picture, it is a sketch of boys from actual life.

In 1667 George Fox founded a Quaker school at Waltham, and directed that the scholars should be instructed in "whatsoever things were civil and useful." The schools of the Society of Friends have striven with some success to follow out this ideal. In many cases habits have been formed and tastes implanted which have been life-long possessions. One old scholar writes: "The hours spent in the natural history room, or tramping along the Went, were, I believe, not only some of the happiest, but some of the most valuable of those Elysian schooldays, and laid the foundation for many a pleasant hour since."

The effect upon the class work of the school is not always as marked as in one case which I recall. Before "hand and eye" training had been introduced into the school, a boy for two years had had the opportunity of joining the workshop of his own free will, but showed no inclination to do so. He was a slow, lethargic boy, always at the lower end of his class. When a carpentry class was started he discovered a latent power and showed such manual dexterity that our trained joiner told me in twelve months' time the boy was able to put him on his mettle. The interesting psychological result followed that his class work began to improve. He had gained confidence in himself, and other powers not so strongly marked were now brought to light.

As a rule, the brilliant athlete, or the boy with a decided taste, needs only direction, not stimulus; it is the average boy, who prefers to be left alone, with whom there is difficulty. Our school is built on the hostel system, so that, instead of matches between houses, we have territorial divisions, and in football and cricket a West Riding team plays against the Midlands, Lancashire and Cheshire against the four northern counties, London and Home against the rest, which will include a colonial contingent, besides recruits from Ireland and Scotland. The winning team is photographed, and the group preserved for future generations.

An athletic trophy is contended for by the various dormitories. A standard for the various events is fixed on, sufficiently low to induce all to enter in the hopes of adding at least one mark to the total, and every additional proof of skill, say every inch above the standard of high jump, 2 ft. 8 ins. for juniors, 3 ft. 6 ins. for seniors, gives an additional mark. This plan, with variations, is pursued with regard to swimming sports in our large covered bath and in the gymnasium too. By striking an average the difficulty of varying numbers in the dormitories is overcome. The corporate pressure brought to bear by comrades, together with the certainty that a little training and practice will result in some gain to the grand total, has an excellent effect in inducing poor athletes to make an attempt.

The motto of our school is "*Non sibi sed omnibus.*" I have seen many boys who have striven to overcome physical defects, from a feeling of *esprit de corps*, reap a reward themselves in development of physique and character. Some measure of compulsion with regard to games we find necessary, but, whenever possible, to lead and not to drive is our aim.

THE uncultivated man is crude, the undisciplined is unruly. Neglect of discipline is a greater evil than neglect of culture, for this last can be remedied later in life, but unruliness cannot be done away with, and a mistake in discipline can never be repaired.—Kant.

NOUGHTS AND CROSSES.

By G. B. MATHEWS, M.A., F.R.S.

Late Professor of Mathematics in the University College of North Wales, Bangor.

THE object of this article is to give illustrations of a method (once more familiar than it is now) of proving arithmetical theorems by means of diagrams. The results are not new; in fact, many of them are of extreme antiquity; still the way in which they are proved deserves to be better known than it is.

Fig. 1 illustrates the construction of what are called, for an obvious reason, *triangular numbers* :—

```
          x                        o
     x   xx               o       oo
x   xx  xxx         o    oo      ooo
xx xxx xxxx        oo   ooo     oooo
```

Fig.

The *n*th triangular number, which will be denoted by t_n, is the sum of the integers 1, 2, 3 . . . *n*. A table of triangular numbers may be constructed thus:—

```
1   2   3   4   5   6   7   .   .
    1   3   6  10  15  21   .   .   .
----------------------------------------
1   3   6  10  15  21  28   .   .   .
```

the general rule being $t_n = t_{n-1} + n$, starting with $t_1 = 1$.

The next figure shows that every whole number can be expressed in one way, and only one, in the form $t_m + n$, where n is not greater than m: thus $1 = t_1$, $2 = t_1 + 1$, $3 = t_2$, $4 = t_2 + 1$, $5 = t_2 + 2$, and so on:—

```
                                                 x
                     x    x     x      x        xx
   x  x   x         xx   xx    xx     xx       xxx
xo xx xxo xxoo     xxx  xxxo  xxxoo  xxxooo   xxxx
```

Fig.

By combining two equal or two consecutive triangles, as shown below (for the case $n = 4$), we see that

$$2t_n = n(n+1), \quad t_n + t_{n-1} = n^2.$$

Hence also $1+2+3+ \ . \ . \ +n = t_n = \frac{1}{2}n(n+1)$.

```
xoooo     xooo
xxooo     xxoo
xxxoo     xxxo
xxxxo     xxxx
```

Fig.

Placing two consecutive triangles back to back, thus,

```
   x
  oxx
 ooxxx
oooxxxx
```

Fig. 4.

we see that n^2 is the sum of the first n odd numbers: for example, $4^2 = 1+3+5+7$. This may also be proved by the following figure:

```
xoxoxo
ooxoxo
xxxoxo
ooooxo
xxxxxo
oooooo
```

Fig. 5.

Here the marks may be reckoned up, beginning at the top left-hand corner, as 1 cross, 3 noughts, 5 crosses, . . . 11 noughts: total, $1+3+5+ \ldots +11 = 36$.

The sum of a, $a+b$, $a+2b$, . . . to n terms is clearly

$$\begin{aligned} s &= na + b(1+2+ \ . \ . \ + \overline{n-1}) = na + bt_{n-1} \\ &= na + \tfrac{1}{2}n(n-1)b; \end{aligned}$$

this may be easily illustrated by a diagram, as well as the formula $2s = n(a+l)$. In the figure $a = 3$, $b = 2$, $n = 5$.

```
xxxoooooooooooo
xxxxxoooooooooo
xxxxxxxoooooooo
xxxxxxxxxoooooo
xxxxxxxxxxxxooo
```

Fig. 6.

The sum of the first n triangular numbers may be found in the following way. Take a solid cube built up out of $(n+1)^3$ little cubes. Remove the top layer, which contains $(n+1)^2$, that is, $t_n + t_{n+1}$ cubes: then take away a vertical slice, containing $n(n+1)$, that is, $2t_n$ cubes, and finally remove another vertical slice containing n^2, that is, $t_n + t_{n-1}$ cubes, so that a solid cube containing n^3 little cubes is left. Thus we have

$$\begin{aligned} (n+1)^3 &= (t_{n+1} + t_n) + 2t_n + (t_n + t_{n-1}) + n^3 \\ &= t_{n+1} + 4t_n + t_{n-1} + n^3. \end{aligned}$$

Now $t_{n+1} = t_n + n + 1$, and $t_{n-1} = t_n - n$; consequently

$$\begin{aligned} (n+1)^3 &= (t_n + n + 1) + 4t_n + (t_n - n) + n^3 \\ &= 1 + 6t_n + n^3 \\ &= 1 + 6t_n + 1 + 6t_{n-1} + (n-1)^3, \end{aligned}$$

and so on: thus finally

$$\begin{aligned} (n+1)^3 &= (1 + 1 + \ . \ . \text{ to } n \text{ terms}) \\ &\qquad + 6(t_n + t_{n-1} + \ . \ . \ + t_1) + 1^3 \\ &= (n+1) + 6(t_1 + t_2 + \ . \ . \ + t_n), \end{aligned}$$

and therefore

$$\begin{aligned} t_1 + t_2 + \ . \ . \ + t_n &= \tfrac{1}{6}(n+1)\{(n+1)^2 - 1\} \\ &= \tfrac{1}{6}n(n+1)(n+2) \\ &= \frac{n+2}{3}t_n = \frac{n}{3}t_{n+1}. \end{aligned}$$

We are now able to find the sum of the first n square numbers: because we have

$$\begin{aligned} 1 &= t_1 \\ 4 &= t_1 + t_2 \\ 9 &= t_2 + t_3 \\ (n-1)^2 &= t_{n-2} + t_{n-1} \\ n^2 &= t_{n-1} + t_n, \end{aligned}$$

and hence

$$\begin{aligned} 1 + 4 + \ . \ . \ + n^2 &= 2(t_1 + t_2 + \ \ldots \ + t_n) - t_n \\ &= \frac{2(n+2)}{3}t_n - t_n = \frac{2n+1}{3}t_n \\ &= \tfrac{1}{6}n(n+1)(2n+1). \end{aligned}$$

It has been proved incidentally that $t_{n-1} + t_{n+1} = 2t_n + 1$; this is obvious when we consider that if the last row of the $(n+1)$th triangle is removed and all but one of its marks added to the $(n-1)$th triangle, we get two t^n-triangles (cf. fig. 1). By means of the subjoined figure (where $n = 7$, $r = 3$) the reader will be able to see that

$$t_{n-r} + t_{n+r} = 2t_n + r^2.$$

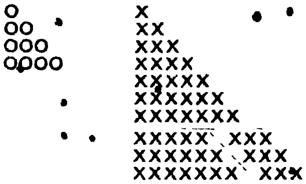

Fig. 7.

Although I cannot give a proof by graphical methods, it seems a pity to conclude without showing, in an elementary way, that the sum of the cubes of the first n natural numbers is equal to t_n^2.

Consider a multiplication table arranged on this plan:—

	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Only suppose that it goes from 1×1 to $n \times n$ (instead of to 5×5).

The sum of the numbers in the first row is

$$1 + 2 + \ .\ .\ + n = t_n;$$

that of those in the second row is

$$2 + 4 + \ .\ .\ + 2n = 2t_n;$$

that of those in the third row is $3t_n$, and so on. Thus the sum of all the numbers in the table is

$$(1 + 2 + 3 + \ .\ .\ + n)\, t_n = t_n^2.$$

Now consider the sums of the numbers in the compartments marked out in the diagram. First we have 1 in the corner: then $2+4+2 = 8$, then $3+6+9+6+3 = 27$, and so on: the sum of those in the nth compartment being n^3, because

$$n\,(1+2+3+\ .\ .\ + \overline{n-1} + n + \overline{n-1} + \ .\ . \\ + 3+2+1) \\ = n(t_{n-1} + t_n) = n.n^2 = n^3.$$

Comparing the results of the two reckonings, we have

$$1 + 8 + 27 + \ .\ .\ + n^3 = t_n^2.$$

Those who find this sort of thing interesting are recommended to read the "Théorie des Nombres" and the "Récréations Mathématiques" of that ingenious and witty mathematician, the late Edouard Lucas.

The following three examples are left to the reader for exercise; the first is given by Lucas, and the others, very likely, are not new:—

(1) Prove that $9t_n + 1 = t_{3n+1}$.

(2) $t_1 + t_3 + t_5 + \ .\ .\ + t_{2n-1} = \frac{4n-1}{3} t_n.$

(3) $t_1 - t_2 + t_3 - t_4 + \ .\ .\ .$ to n terms is equal to $\frac{1}{4}(n+1)^2$ or $-2t_{\frac{1}{2}n}$ according as n is odd or even.

EXPERIMENTAL CHEMISTRY.

A Course of Work based on the Junior Local Examinations of Oxford and Cambridge Universities.

By Prof. J. B. Coleman, A.R.C.S., F.I.C.,
South Western Polytechnic, Chelsea.

I.—Chemical and Physical Change. Mixtures, Compounds and Elements. Indestructibility of Matter.

The subject is treated in such a manner as to give the *teacher* working details of the experiments suitable for the course. The experiments, unless otherwise stated, are to be performed by the student. If an experiment is starred (*), it should either be performed by the teacher in the lecture room, or done by the student under the *personal* supervision of the teacher.

(1) Chemical Change as Distinguished from Physical Change.

Experiment 1.—Hold a piece of platinum wire, or a thread of asbestos, in the bunsen-flame by means of a pair of crucible tongs. Notice that the substance becomes red-hot, but resumes its usual appearance on cooling.

Experiment 2.—Heat a piece of bright copper wire in the same way. Notice on cooling a thin grey film covers the wire.

Experiment 3.—Heat a piece of magnesium ribbon in the same way; the magnesium will take fire, and leave a white residue, quite unlike metallic magnesium.

In the first experiment the change was a *physical* change, and was temporary in nature. In the second experiment the copper was changed on the surface, and in the third experiment the magnesium was entirely and permanently changed. The two latter effects were due to chemical change.

Chemical change may occur in various ways, but in all cases the substance, or substances, formed differ in some respects from the original bodies. The change may be of colour, density, solubility, shape, &c.

(2) Illustrations of Chemical Change.

Experiment 4.—Mix a small quantity of iron filings, which has been sifted through muslin (or, better, use "reduced" iron), with half its bulk of flour of sulphur. Transfer the mixture to a test-tube, and heat it gently; the mixture will glow, and when cold will be seen to be of a dark grey colour. This is an illustration of *chemical combination*, the change being accompanied by a rise of temperature and change of colour.

Experiment 5.—Cover the bottom of a test tube with red oxide of mercury, hold the tube in a horizontal position, and heat it strongly. Small globules of mercury will collect on the cold part of the tube. As soon as this happens, introduce a glowing splint of wood. The wood will burst into flame. This behaviour is due to the action of an invisible gas called oxygen, which has been expelled from the mercury oxide..

The above experiment is an instance of chemical decomposition, the red oxide of mercury having been decomposed into metallic mercury and the gas oxygen.

Experiment 6.—Place in a small beaker a few grams of clean iron turnings, and add a moderately strong solution of copper sulphate. *Gently warm* the solution as shown in Fig. 1, and stir from time to time with a glass rod. When the solution has stood a short time, red copper will be seen to have separated out, and the colour of the solution have changed from blue to green.

This experiment is an illustration of chemical change, the iron having dissolved in the liquid, taking the place of the copper, which has separated out.

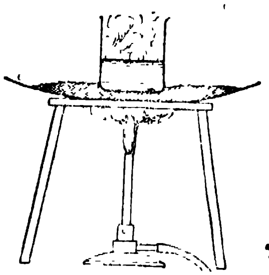

Fig. 1.

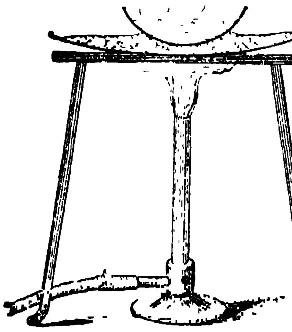

Fig. 2.

Experiment 7.—Place in two small porcelain dishes equal quantities of sodium carbonate (washing soda). To one add water, and notice the soda slowly dissolve. To the other add dilute hydrochloric acid, and notice the soda dissolve rapidly with effervescence. Place each of the dishes on wire gauze over a tripod stand (Fig. 2). Heat *gently* with a bunsen-flame, when the liquid will gradually pass off as vapour. As the liquid becomes less, reduce the size of the flame to prevent loss by the pasty mass spirting out of the dish. When the liquid is driven off, continue the heating until the contents are *quite dry*. Compare the residues in the two dishes. Both will be seen to be white solids, but on tasting the one treated with water it will still have the taste of washing soda, whereas the other will taste like common salt.

The water simply produced the *physical* change of solution, hence on evaporation the same body is left. The acid, however, produced a *permanent or chemical* change of the soda into common salt, and this latter body was left after evaporation.

(3) Mixtures and Compounds.

When the red oxide of mercury was heated in experiment 5, such dissimilar substances were produced that it is plain that the mercury and oxygen cannot be present in a simply *mixed* condition to form mercuric oxide. Again, when the mixture of iron and sulphur was heated in experiment 4, the substance left after heating differed entirely from the mixture. Hence it is evident there is a great difference between bodies mechanically mixed and when the same bodies are bound together by chemical combination.

The following experiment will make this difference between a mixture and a compound more evident.

Experiment 8.—Mix some finely sifted copper filings (or, better, bronze powder) with an equal bulk of flour of sulphur. Reserve half this mixture and heat the remainder in a test-tube, and when cool, powder in a mortar. Treat separate portions of the original mixture before heating, and of the substance, after heating, as follows:—

	Before heating.	*After heating.*
(*a*) Note the colour.	The colour is intermediate between red copper and yellow sulphur.	The colour is of a deep grey, quite unlike the mixture.
(*b*) Examine with a lens.	The separate particles of copper and sulphur are seen.	No difference is observed between the particles.
(*c*) Heat the substance on a piece of porcelain.	The sulphur burns with a blue flame.	No combustion takes place.
(*d*) Shake up with water and allow to stand.	The copper subsides leaving the sulphur suspended for some time.	No copper or sulphur separates.

From the above experiments it will be seen that the chemical compound of copper and sulphur differs in its properties from its constituents, whereas the mixture retains the properties of the substances mixed together.

(4) Simple Substances or Elements.

Most of the substances used in the preceding experiments can be separated into two or more dissimilar bodies. Mercuric oxide furnished the two substances mercury and oxygen. The latter bodies have never been separated into two or more dissimilar substances, accordingly they are called simple bodies or elements. Other elements already experimented with are platinum, magnesium, iron, sulphur and copper. About seventy elements in all are known, of which half are of common occurrence, the remainder are rarely met with.

(5) Indestructibility of Matter.

In the experiments described, although loss or gain of matter frequently takes place, it must be understood no destruction or creation of matter takes place. The substances may change their physical condition—*i.e.*, may change from the gaseous to the solid state or the converse, but the actual amount of matter remains the same.

The following experiment will illustrate the indestructibility of matter:—

Experiment 9.—Attach a wax vesta, in a vertical position, to a block of wood by heating the *cut end* and pressing it on the wood until the wax is set. Set fire to the vesta, and while the match is burning invert over the flame a cold, clean, dry glass cylinder. Notice the deposition of water inside the jar. Next place the cylinder upright and add to it some clear lime-water, and shake. The lime-water will become milky. This change shows that the air within the jar has become changed, since ordinary air will not affect lime-water under similar conditions. Hence it is seen that, although the vesta gradually burns away and disappears, it is simply changed to moisture and an invisible gas which turns lime-water milky.

If now the match is burnt in an enclosed volume of air and the products retained, it may be shown that no change of weight occurs.

Experiment 10.—Cut off about one-third of another wax vesta, selecting that portion which carries the head. Carefully suspend it, by a thin copper wire, in a 30-ounce flask, so that the head of the match touches the bottom of the flask; fasten the upper part of the wire by placing into the neck of the flask a good-fitting cork. The length of the wire should be so adjusted that the head of the vesta is in *contact* with the *bottom* of the flask. Now weigh the flask and contents. Next carefully heat the bottom of the flask so that the match takes fire. When the match is burnt out, allow to cool and weigh again. The weight will be found to be the same as before, showing no loss of weight occurs, and, therefore, no destruction of matter has taken place.

NOTE.—The flask should have fairly thick walls, or the expansion of the heated air may cause it to burst; even if this happens, there is no danger if the body of the flask does not face the experimenter.

THE TEACHING OF ENGLISH IN PUBLIC SCHOOLS.[1]

By the Rev. G. C. BELL, M.A.

Master of Marlborough College.

MY experience shows that public school boys, even in the higher forms, are often deficient in their knowledge of English; to such a degree that even their purely classical work is seriously hindered by their inability to understand English, their limited vocabulary, and their lack of power to express their thoughts orally or in writing. The time usually assigned to the teaching of English is not sufficient, at any rate for forms below the Fifths; and often the poorness of the results is largely due to a want of system and co-ordination.

The following suggestions, based on expert opinion, are offered in the hope that they may help to remedy this serious defect.

(*a*) In lower forms, where the average age is below 15, the main objects are to teach (with due regard to the age and standard of each form)—

(1) An intelligent knowledge of the vocabulary, phrases, idioms, &c., of simple English prose and verse.

(2) Expression of this knowledge orally and in writing.

Grammar is helpful, but it must be used with much discretion.

In the case of younger boys grammar should be taught inductively from the books they read; they can be shown how to pick out substantives and substantival clauses; adjectives and adjectival clauses linked by relative pronouns or otherwise; adverbs, and adverbial clauses. From their books they can then learn elementary analysis of words and sentences, and necessary rules of syntax.

For these purposes there is need of a series of reading books, graduated in difficulty, containing selections of prose and verse; each piece to be fairly complete in itself, and of such a length as to be suitable for two or more lessons.

A simple manual of grammar would be used, but mainly as a methodical storehouse of results thus gathered, and for constant reference and verification.

So far the teaching would be mainly oral, supplemented by constant use of the blackboard: and from the first every effort should be made to extract from the boys intelligible answers to questions based on what they have been taught. The form-master should estimate the success of his teaching largely by the progressive ability of his boys to express their knowledge in grammatical and well-formed answers.

This would be greatly helped by continual practice in reading aloud, for which the master would set the pattern; boys should be made to attend carefully to pronunciation, articulateness, emphasis, and (by degrees) to spirit and expression.

Also there should be frequent oral reproduction from memory of prose or verse recently read - both "repetition," and also the substance in the boy's own words. This would be helped by occasional written reproduction of a narrative, or biographical sketch, or short poem previously studied.

But it would be necessary to prepare the class for such oral or written exercises by careful blackboard work at the time, or at a previous lesson: splitting up the selected piece into its component parts; writing down the pith of each part in as few words as possible (for which suggestions may be gathered from the class); and either allowing the boys to copy down this analysis, or testing their remembrance of it before they begin their reproduction.

Occasionally there might be immediate reproduction, oral or written, of some short story or poem read slowly once or twice by the master; or co-operative working out of the treatment of some simple subject: suggestions invited from the form would be sifted, arranged, and set down briefly on the blackboard: these might be left on the board, or be covered, while the exercise was being written: or the exercise might be written out of school.

Again there might be occasional practice in letter writing on subjects similarly suggested and arranged.

In general each lesson should begin with some oral revision of the previous lesson.

It is obvious that not less than two hours weekly would be needed in the lower forms for English teaching on these lines: so much of it might be oral that there would not be much burden of paper work for the master to look over.

(*b*) In higher forms several of the foregoing exercises, *mutatis mutandis*, would still be found useful; but reading books would be replaced by careful choice of such English classical writers in prose and verse as are most helpful for training the imagination and the reason. The older writers, Chaucer, Spenser, Shakespeare, Milton, &c., being more difficult in vocabulary and expression, should be reserved for the highest forms; though I am bound to admit that some experienced masters consider that Shakespeare, "rationally taught," is suitable even for Fourth forms. There is abundant choice among the moderns for the lower stages of the Vths. Prose writers should be chosen at least as often (preferably twice as often) as poets: modern school higher forms may find help and interest in translations of Homer, the Greek Tragedies, Virgil, &c.

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[1] A paper read at the Headmasters' Conference, December 22nd, 1899.

The aim would be to develop further the power of oral and written expression; to give some knowledge of style, rhythm, and metre: and (by graduated steps) of the broad outlines of the development of English literature in its successive stages: in all higher forms attention would be called to the literary and artistic qualities of the works selected.

To secure time for all this, grammatical questions and difficult words and phrases would be discussed no more than is absolutely necessary. The Clarendon Press Shakespeare is not the model to be followed.

Occasionally there may be practice in paraphrase (in strict moderation), and in précis-writing. Able boys may be encouraged to produce verse translations of prepared books or unseen; or to reproduce from memory in their own verse some Greek, Latin, French or German poetry recently read.

For essays some instruction will be needed—

(1) Respecting sources from which materials may be got.
(2) In the analysis of the subject, and arrangement of material.
(3) In composition, expression and style.

It must be added that whether in higher or in lower forms written work will be valuable in proportion as the teacher can find time to criticise, explain, and correct mistakes or defects with each boy individually.

For confirmation and illustration of what is here briefly suggested reference may be made to papers by

J. G. Fitch, "Lectures on Teaching," chapter ix.; E. W. Howson and H. C. Beeching, in Cookson's "Essays on Secondary Education"; A. S. Way in Spencer's "Aims and Practice of Teaching," chapter iv.; F. H. Dale, "On the Teaching of the Mother-tongue in Germany" (Education Department, Special Reports, 1897, pp. 533-578).

THE TEACHING OF BOTANY IN SCHOOLS.[1]

By L. C. MIALL, F.R.S.

Professor of Biology, Yorkshire College, Leeds.

So far as I can judge—and my opportunities are only moderate—the teaching of botany in schools is not spreading. Chemistry and physics make rapid strides, but botany is neglected. This state of things cannot continue without serious loss. The phenomena of living plants constitute a first-rate educational opportunity. With simple appliances and no very elaborate training, the young observer can be guided to a knowledge of what is going on in the growing plant. I know of hardly any scientific inquiry which is at once so practicable and so inviting. A special reason for encouraging the study of botany is that a knowledge of the great facts of plant life is essential to scientific agriculture. Those who live by agriculture, which is still our greatest industry, are already beginning to demand that, in rural schools at least, the scientific basis of agriculture shall somehow enter into the course of instruction. But where are the teachers, and what sort of training have they received?

The botany which we have been teaching hitherto is a particular kind of book-learning. The pupil takes from his teacher a number of statements about plants, which the teacher in turn takes from an elementary text-book. Meanwhile the great thing is neglected—I mean the practical, experimental knowledge of the way in which plants discharge the primary functions of nutrition and reproduction. The botany commonly taught in schools is not experimental; it is not an inquiry, but a mass of information; it creates no thirst for knowledge—in a word, it is dead. Surely it is time to realise that those who have to live by the farm or the garden are growing up ignorant of scientific method, and practically ignorant, whatever verbal knowledge they may have picked up, of those natural processes which render possible the raising of crops and the rearing of stock.

The school-course may be conveniently divided into three stages, according as the pupils are children (age 8-12), boys and girls (13-16), or young men and women (17-19). The science lessons given in the first stage should, in my opinion, take the form of object lessons, largely founded upon natural objects. The natural objects should be in fair proportion to live objects, and, to avoid the infliction of pain, they will usually be live plants rather than live animals. In this stage there is a fine field for the resourceful teacher of botany. In the second stage we may begin systematic science, and here mathematics, chemistry and physics will be the common choice, except where local accidents or individual preferences come in. Natural history will therefore sink to a subordinate place. It may be kept alive in those who show aptitude for it by the school natural history club and the occasional natural history ramble. In the third stage, which is that of preparation for university scholarships, or of study in a technical school, such as will live on the land, or follow some pursuit in which natural history plays a part, may well take up their natural history again and study it methodically in the light of their chemistry and physics.

In the early teaching of botany—that is, before the stage of systematic science—I would recommend the following maxims: (1) No technical terms in Latin or Greek. (2) No lectures or information lessons. (3) No books in class. (4) Let all the lessons be interrogations of actual objects, and largely of live plants. (5) Try to make the class responsible and active throughout. Never tell them anything that they can find out for themselves.

Rambles and out-of-door lessons may be made very useful. I have seen notes of some very promising lessons of this kind given to Scotch school-children by Mr. Robert Smith. Each ramble had one or more marked features—*e.g.*, the tokens of autumn and the behaviour of different plants during the decline of summer heat and light; spines and prickles, with their various forms and uses; comparison of the different species of Fucus found upon a sea beach, and the modifications which adapt each to a particular level; living boughs, and the still legible chart of their growth during several successive years. The out-of-door lesson should be followed up by an in-door lesson, in which a very few of the points suggested by the ramble might be worked out in some thoroughness. The teacher must never descend to mere lists of species observed, nor to any mechanical routine.

The teacher of a special subject, such as botany, is often cruelly treated in the matter of time. So many subjects are crowded into the school-course that nothing can be well taught. To begin with, it is not uncommon to insist upon four languages. Of course all are not mastered; perhaps none of the four is carried to the point at which it becomes useful, but the school-course is ruined. We have to choose continually between good things that cannot be enjoyed together, and nothing demands more moderation and self-restraint than the choice of subjects for a school-course. It seems to me absolutely futile to teach botany or anything else for an hour a week, but even that is not an extreme case. I have known chemistry and English poetry get each an hour in the fortnight! If I had to draw up a school time-table, I should go on the principle that everything that is taught at all should come round pretty nearly every day for at least one year. Sacrifice without regrets the half-learnt languages and sciences, and let there be something solid and lasting in our schooling.

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[1] An address given at the Conference of Science Teachers, at the Imperial Institute, on January 10th, 1900.

I will not this morning discuss further the object-lesson nor the teaching of science to children, but will go on to that later stage in which certain pupils, having studied chemistry and physics, return to botany for special reasons which are perhaps connected with their future calling. What sort of botany shall we try to give them? I should not myself make descriptive and systematic botany the chief thing, nor yet morphology and the comparison of a series of cryptogamic types, nor yet vegetable histology. All these have their interest and value, but they seem to me distinctly inferior in utility and practical interest to the great problems of the nutrition and reproduction of the higher green plants. They may well come into the course, but they should be subordinate, and not principal. The study of growth and reproduction in the higher plants is specially to be recommended, because it is applicable to practical purposes of the greatest importance to mankind, and further because it can be pursued experimentally, utilising the methods and knowledge gained in the preceding courses of chemistry and physics.

Such a course of experimental plant-physiology would include leaf-assimilation, root-absorption, the transport and storage of food, growth, the flower and the function of its parts, fertilisation, the ripening of the seed, germination, the structure and growth of the seedling. It should occupy several hours a week for two or three years. It should be truly experimental, the experiments being not merely illustrative, but exploratory. An experimental plot of ground and some outlay upon simple apparatus are essential. I see no reason why such a course should not be offered in certain public and secondary schools whose pupils expect to live on and by the land; it would also make an excellent foundation for higher studies in biological science at the university.

I cannot tell you in detail what to do and how to do it. Even if I had time to explain, and you had patience to listen, it would be contrary to all my principles to tell the teacher what he can find out for himself. The materials for a good experimental course are to be found in such books as Detmer's "Plant Physiology," or Darwin and Acton's "Physiology of Plants." Weave them into a course of your own in such a way that every answer which experiment yields forms the basis of another question. It can be done, and teachers of no extraordinary power have been found to do it. But no one can do it *extempore*. There must be pains bestowed; sometimes you will have to change the order of your experiments again and again to remove awkward gaps. If you will only persevere, you will become readier, while your course will become more fruitful and more stimulating. But such results are not got without hard work.

The teacher must strive hard against the temptation to bring in the ready-made explanation. It is like stepping from stone to stone in crossing a stream. The feat is to step from experiment to experiment, while to tell things which might be proved is like setting your foot in the water.

I have lately been allowed to see schemes of experimental lessons in physiology, devised with much care and skill by teachers who were eager to make their work truly scientific, and I am told that not a few Yorkshire teachers have drawn up their own experimental courses in chemistry and physics. Let me note in passing that this admirable plan can only be realised, in organised Schools of Science at least, under an enlightened inspector. The examination system conducted by printed papers strikes it dead at a blow.

It is in this way that a class learns what scientific proof really is, and how totally it differs from the mere illustration of accepted statements. Scientific proof, though we have to work hard to get it, possesses unique virtues. To establish a single comprehensive statement by fair reasoning from facts truly observed not only sharpens the intellect, but ennobles the character. We must learn more and more to do without putty and sandpaper. Putty is the statement out of the text-book made to take the place of actual observation or experiment. Sandpaper is the verbiage used to gloss over an "awkward fact."

A word upon the use of books in science teaching. Both teacher and pupil may be enslaved by their text-books, and depend upon them so completely that they cannot observe or reason for themselves. But we cannot do without books, and indeed it is one chief purpose of wise education to help us to use them aright. Sound teaching should make us strong in the power of what we have seen and done, eager to think our own thoughts and practise our own methods. Much depends upon how we begin. In an elementary course I would produce no book in class. The book gives the explanations in advance, and saves the pupil all trouble of thinking for himself. In a later stage the book becomes safer, and at length indispensable. The well-trained student ought to be capable, without servile deference, of rapidly assimilating the best results of another's labours. The book is to be to him, not a lord and master, but a valuable tool.

I thoroughly adopt Professor Armstrong's doctrine that every good course of science is an investigation, and that even pupils of tender age may be encouraged to inquire. Natural history, from the vast number of its unsolved problems, and from the persistence with which Nature forces them upon our notice, has advantages of its own for the practice of the heuristic method. The conviction that we can get new results by our own observation and reflection is essential, and with that conviction even men of small powers have rendered good service. The man who is convinced that he can never find out anything for himself ought not to teach at all. His light has gone out.

When I recommend reformed methods to teachers, I am continually met with the objection that pupils taught on such lines would not pass their examinations. The difficulty is a real one. Public examinations are many, some of them are unwise, and their importance is greatly over-rated by the public. Many of us are so busy preparing pupils for examination that we have not time to teach.

The difficulty largely springs from the practice of examining simultaneously great numbers of candidates. Then the printed paper of questions becomes all-important. A detailed syllabus is prepared, which is held to be the safeguard of the teacher. It really completes his subjection. Henceforth he has no choice as to what or how he shall teach. In losing liberty he loses force and hope, and becomes a machine for winning results.

But let me beg the enlightened teacher not to despair altogether. Even now, under the domination of the printed paper, it pays best to teach as well as you know how. Your pupils will often fail to produce the little technicalities which examiners value so highly, but if they show some real command of the subject, that will save the situation. Discouraging as the present tests undoubtedly are, faithful teaching still pays better than cram.

How can matters be mended? I see a ray of hope in the practice of the Victoria University, with which I have long been connected. There the teachers act as examiners by rotation; they always act as examiners in the practical work set to their own men. The external examiner is present to see that all is fair, but the internal examiner, that is, the teacher, has equal rights with him. Lastly, a board of teachers revises every paper, and is free to reject, as it often does, whimsical or pedantic questions. Two conditions seem to me essential, if the examination is to help, and not to hinder. In the first place, the examiner must be chosen less for his special knowledge than for his educational enlightenment. Secondly, the teacher must be allowed to take a responsible share in the examination of his own pupils. I rejoice to say that some of the new inspectors of organised Schools of Science fully recognise this, and work with the teacher instead of dominating him.

If the examination system should ever be liberalised in this way, the minute prescriptions of the syllabus will disappear. The examiner will learn that it is not so much his office to call for information and technical terms as to find out what the candidates can do. I know of few changes which would help more to make the teaching of botany what it ought to be.

It would be very profitable if teachers of botany could now and then meet to consider how particular subjects, such as assimilation by green leaves, root-absorption, fertilisation, dispersal of fruits and seeds, the behaviour of seeds and seedlings, &c., can best be handled. I have heard something of a proposal to discuss the teaching of botany at the next meeting of the British Association. I wish that discussion might be particularly invited on the teaching of experimental plant physiology to pupils in the upper forms of secondary schools and in rural technical schools. Such teaching, if sound and enlightened, might become an excellent basis for scientific training in agriculture and horticulture.

THE SYLLABUS AND EXAMINATIONS IN THE THEORY OF TEACHING, WITH SUGGESTIONS FOR THEIR AMENDMENT.[1]

By JAMES WELTON, M.A.
Professor of Education, the Yorkshire College, Leeds.

THE general trend of the alterations in the relations between the Education Department and those engaged in the work of primary education has for some years been in the direction of giving greater freedom to the latter to organise their work, with a consequent reduction of uniformity in the work done. To take the work in which we are all specially engaged. Just as a University degree is a guarantee that the holder possesses a certain amount of culture, but does not specify in what branches of knowledge he is proficient, so it is now with the teacher's certificate, so far as it is issued on the results of the examination in Part II of the Syllabus. We have there not only a choice of subjects, but also permission to substitute for them courses in preparation for recognised examinations of the Universities and other qualified bodies. On the side of general culture, then, the one teacher's certificate does not imply uniformity in either amount or kind of knowledge. We can many of us remember when it attempted to do this, when there was no choice of subjects, but all candidates for the certificate had to enter for the same identical examination.

No one, I take it, wishes to return to those days. But we have the analogue of them in the present Syllabus and examinations in the theory and practice of teaching. Here, in the most important subject of all for the teacher, no such liberty has been given as in the case of Part II of the Certificate examination. Here we have still a uniform Syllabus and an identical examination imposed upon all aspirants for the teacher's certificate, whether they be acting teachers or students in training colleges.

An examination should be a test of work done; so if the work done in preparation for a certain examination be not generally the same, the examination should not be the same. But no two things can well be more unlike each other than the training and preparation for the examinations in education received by a student in training college and by an acting teacher. On the one hand, you have much actual practice in teaching, with its natural result of familiar acquaintance with the various details of school work, but with very little time or opportunity to reflect on the principles underlying that work. The acting teacher must, as a rule, rest content with a little theory of teaching got up from some text-book or with the help of tuition by correspondence. But this must be all very superficial; time and good tuition are necessary for an effective mastery of the theory of education and of the philosophical disciplines which underlie it, and neither time nor tuition in such subjects is available to the ex-pupil-teacher. Would it not be better, then, not to pretend to examine him in such subjects as ethics, psychology and logic? As his training has been frankly empirical, so let his examination be of an essentially practical character.

But in the case of students in training colleges the preparation has been entirely different. They have for two years—or for three years, as the case may be—largely ceased to do any teaching, and they have altogether ceased to take a regular part in school work. Now I am not prepared to argue that the regulations and arrangements as to practice in our courses of training are by any means what we should desire and aim at. I hold, indeed, that they cannot be satisfactory whilst the present requirement of an average of 75 hours in school each year marks the maximum of teaching work which most training colleges can give their students. Nor do I see how this can be increased so long as the student's own culture must go on *pari passu* with his technical training, especially when we remember the low point from which it starts.

During these years he may profitably, under the competent guidance of his teachers, consider his life's work from the general and philosophical point of view. He may study ethics, and from it deduce the very purpose of his work; he may endeavour through consideration of psychology and logic to understand the materials he has to work in. But he cannot get such an intimate acquaintance with details of school work as the acting teacher acquires. He therefore needs a different type of examination from that which is appropriate to the acting teacher. As the latter should deal with actual school work and with principles just so far as they can be gathered by intelligent thought on such work, so the former should emphasise principles and theory, though of course it should test the power of applying those principles to supposititious pieces of teaching.

Whilst we have two fundamentally different ways of training our certificated teachers, no uniformity of examination can prevent the results of those two different modes of training from being diverse. Moreover, either the acting teachers are asked for what they cannot possibly give, whilst their strong points are passed over, or the students in training colleges are not called upon to show a sufficient mastery over the theory of their professional work, and are called upon for knowledge of details which only experience can give and which experience the training college has been unable to supply, or lastly, the examination, in trying to meet both cases, meets neither, and degenerates into a mere exercise in commonplace and triviality. I see no way out of this dilemma except in the separation of the examination of acting teachers from that of students in training colleges.

It is not on merely theoretical grounds that I advocate this separation of the examination tests of two different things. I have a very practical purpose in view in an important amendment of the examination itself, so far as students in training colleges are concerned. The present Syllabus is arranged with reference to an examination at the end of each year of training. These separate examinations may be advisable for acting teachers—on that I express no opinion—but that they are a misfortune in the case of students in training colleges I am convinced. For with an examination at the end of each year, the order in which the various parts of the Syllabus must be taught is determined in important particulars for each lecturer from without. And this, I submit, is regrettable, and that independently of any criticism on the Syllabus itself. Personally, I do not think that the present distribution of subjects between the first and second years is a happy one. Especially do I regret the postponement of psychology to the second year. That seems to me to compel us to build without laying the foundation. I think this arrangement bad in theory, and I have found it work badly in practice. Nor do I agree with taking logic before psychology with students of education. I am told that it is not logic in relation to education that the Department wishes for, but only some elementary formal logic as an exercise in thinking. But we do not learn to think by studying logic; indeed, we can only study it profitably when we have already learnt to think, and so are able to analyse our thought processes. Again, when future teachers do study logic, I hold they should study it, as they should psychology and ethics, with special reference to the work of education, and in that case the study should follow that of psychology. I urge that we should be left free each to follow his own bent. Different minds will always approach so wide a subject as the theory and practice of education from different points and in different ways, and each will do the best work of which he is capable, only if he is free to do it in his own way, and to take the topics in his own order. The Syllabus, happily, does not specify in detail what we are to teach; that is left to the discretion of each lecturer, and doubtless there are different amounts of emphasis placed on various parts of the course by different teachers — each dwells most on what he knows best and is most interested in. This, it seems to me, is altogether good and right. The subject of education is so wide that no student in training can thoroughly master the whole of it, and so long as he develops enthusiasm and true educational spirit, it is a small thing whether he works most at this part of the subject or at that. But our present freedom is imperfect in the one most important point to which I have already referred—the order of subjects. This is of the very essence of method. So that, general as the present Syllabus is, it yet imposes upon us all a method from without, and I for one find this imposition a serious hindrance to my work. But the imposition can only be removed by amalgamating the examinations now held at the ends of the first and second years. This would immediately give each lecturer the freedom to teach in the order which seems best to himself. It would, moreover, especially as the examination for acting teachers would be severed from that for students in training colleges, then be possible to make the latter much more searching in its character than it is at present. I would suggest an examination extending over two days, and consisting of four papers of three hours each. Each of these papers should contain a choice of questions, so as to meet such differences in preparation as I have alluded to. Further, I think one of the papers should be an essay paper, so as to encourage the students to take a wide outlook on educational matters. All students should be required to take this examination at the end of their second year. A separate additional examination, must, of course, be provided for third-year students.

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[1] Abridged from a paper read at the annual meeting of the Association of Principals and Lecturers in Training Colleges under Government Inspection at the English Education Exhibition, January 12th, 1900.

And lastly. Granted the principle of this one examination instead of two, I do not see why the Education Department should insist on keeping it in its own hands. Already the examination in Part II may be conducted by Universities and University Colleges: already the examinations of such bodies in the theory and practice of education are accepted in the case of graduates as sufficient for the full elementary teacher's certificate. Why should not these principles be extended, and the examination in the theory and practice of education be also transferable to such recognised bodies, with, it may be, one of the inspectors of training colleges as an *ex-officio* examiner? I feel sure that the Universities would rise to the occasion and provide suitable examinations, and it would then be a matter of choice with each training college whether students were entered for one of these examinations or for that of the Education Department. Each would choose the examination which was most on the lines of its own training work. There would be less uniformity, but that I for one should welcome; we cannot have uniform training, why should we have uniform examinations?

I desire, then, to see the Universities take up more fully the work of training and examining in the theory and practice of education, and at the same time I desire to give the utmost freedom to the training colleges both in organising their instruction and in selecting the examination by which that instruction shall be tested.

But if this last step cannot be taken at once, I would still urge the desirability of the immediate adoption of the suggestion to amalgamate the examinations of the first two years, so as to leave us who are engaged in the work of training full freedom to do that work in the way which seems best to us.

EXAMINATION PAPER IN THE THEORY OF TEACHING.

CANDIDATES for admission into training colleges for public elementary schoolmasters and schoolmistresses, or candidates for the office of assistant teacher in a public elementary day school in connection with the Education Department, are required to present themselves at what is called the Queen's Scholarship Examination. Only those who obtain a place in the first or second class are eligible for admission as Queen's scholars to a day or residential training college. Candidates may offer all or any of nineteen subjects, one of which is known as the Theory of Teaching. In view of the widespread desire to create interest in the theory and practice of education among teachers in secondary schools, many of our readers will be glad to see the questions set on the Theory of Teaching in the most recent Queen's Scholarship Examination held last December. Two hours were allowed for the paper.

To prevent confusion of thought, it is worth while to point out that the examination here referred to is preliminary to those considered in Professor Welton's paper, which precedes this.

THEORY OF TEACHING.

Answer *seven* questions, including the first, for which higher marks are awarded.

If you answer more than *seven* questions in all, only the *seven* answers coming first on your paper will be revised.

(1) Write notes of a lesson on *one* of the following subjects, and say for what standard or infants' class you intend the lesson:—

(a) A stream.
(b) The diurnal motion of the earth.
(c) A pebble.
(d) The migrations of birds.
(e) The foot rule.

(2) Give a sketch of a lesson to Standard IV. on the *preposition*, beginning with illustrations and leading up to a definition.

(3) What kind of preparation have you been accustomed to bestow on the lessons given by you to your class in *reading*, or *mental arithmetic*, or *grammar*, and what benefits have you and the class gained by such preparation?

(4) What indications do children give by their behaviour of the want of ventilation in the school-room? What dangers do they incur from breathing foul air? Describe the appliances for ventilation in your school.

(5) Give a few examples to show how you could impress and illustrate object-lessons by means of suitable occupations.

(6) Describe a word-building lesson suitable for Standard V., *or* for the first class of an infants' school.

(7) Describe as fully as you can the methods used in your school for testing and recording the progress made by the children in the different subjects of instruction.

(8) What are the advantages of "learning by heart"? What use would you make of it in teaching *grammar* and *history*, *or* in an infants' school?

(9) What educational ends are to be served by skilful questioning? What style of question ought to be avoided? What advantages are gained by requiring answers to consist of complete sentences?

(10) Describe the kind of drill or physical exercise practised in your school. What object is it intended to serve?

(11) Make eight interesting concrete examples in arithmetic for the first class (not Standard I.) in an infants' school; *or* explain, as to Standard V. or VI., the principle of "cancelling" in working proportion and vulgar fractions.

(12) What are the "aids" that a teacher should make use of in giving object-lessons to infants or in elementary science?

TEACHERS' NOTES ON ENGLISH HISTORY, 1603-1715.

By C. S. Fearenside, M.A.(Oxon), and L. J. McNair, B.A.(Cantab.)

IV.—The Commonwealth, 1649-1660.

For eleven years England was under a non-regal form of government which called itself a "Commonwealth"—a period unique in English history for its fertility in political experiments.

I. Distinctive Features of the Period.

(i.) Trial of a Republican Polity. Charles I.'s attempt to do *without a Parliament* **(1629-1640)** was answered by an attempt to do *without a King* **(1649-1660)**. Both experiments failed owing to the active hostility of a majority of the ruled.

(ii.) Parliamentary Union of the British Isles—more complete than that achieved in **1707** and **1800**, but effected under more evident compulsion.

(iii.) Renewal of an Active Foreign Policy. Motives: colonial, commercial, religious.

(iv.) Written Constitutions: *INSTRUMENT OF GOVERNMENT*, **1653**, and *HUMBLE PETITION AND ADVICE*, **1657**. (N.B. various meanings of "constitutional.")

(v.) Remodelling of the Church of England on lines as "broad" as was consistent with the safety of the dominant party—**Independents**. No Bishops; no Presbytery; no Liturgy. A character, not a creed, test applied to the parochial clergy.

(vi.) Standing Army recognised in all the constitutions of the period.

II. Divisions of the Period.

(i.) The Parliamentary Republic, **1649-53**.

(1) **Its extension** to Ireland and the Colonies of England, 1649-51.

(2) **Its defence** against external enemies: (a) Scotland, (b) The United Netherlands.

(3) **Its overthrow** by Cromwell, owing to renewed quarrels between *Parliament* and *Army—i.e.*, between the *civil* body which claimed, and the *military* body which possessed, power.

(ii.) The Presidential Republic, **1653-59**.

(1) **The Assembly of Nominees:** abortive wholesale reforms.

(2) **The Protectorate**, established under the *Instrument of Government*, and remodelled in the *Humble Petition and Advice*.

(a) *Home Policy*: arbitrary, reproducing most of the constitutional phenomena of Charles I.'s Personal Government—except its absolutist theories and its inefficiency.

(b) *Foreign Policy* "militantly Protestant" [cf: Elizabethan Foreign Policy].

(α) Anglo-Dutch War concluded.
(β) Alliance with France against Spain.

(iii.) The Year of Anarchy, **1659-1660**.

(1) Renewed wrangling between **Parliament** and **Army**. Revolts of Royalists and Presbyterians.

(2) Alternatives: (a) **Anarchy**, (b) **Military Rule**, (c) **Stuarts**.

(iv.) The Restoration, **1660**.

(1) *State of Parties* after the death of Oliver Cromwell, 1658.

(a) **Republicans:** split up into factious groups.
(b) **Presbyterians:** } who had joined in the second Civil
(c) **Royalists:** } War, 1648.

(2) "*Restoration is always Revolution*" (Mommsen). "The Restoration" professed to restore—

(a) **The old Kingship:** } but the civil reforms of 1641 still held good, and Charles II.'s Parliaments
(b) **The old Parliament:** } exercised freely powers unclaimed before the Civil War.

(c) **The old Church of England**; but, though Episcopalian in polity, it did not again (for some time) become Laudian in policy.

III. Miscellaneous Points.

(i.) Biographies: Blake, Cooper, David Leslie, Lilburne, Lambert, Milton, Monk, Vane.

(ii.) Map Work: Cromwell's campaigns in Ireland and Scotland: Blake's pursuit of Rupert.

(iii.) Texts (for talks or problem work). Sayings of Cromwell.

(1) "It will tend to prevent the effusion of blood." [In Ireland, 1649.]

(2) "You are no Parliament." [In the Commons, April 20, 1653.]

(3) "Nothing was in the hearts of these men but 'Overturn, Overturn.'" [Assembly of Nominees.]

(4) "I called not myself to this place." [To first Protectorate Parliament, 1654.]

(5) "The Papists in England have been accounted, ever since I was born, Spaniolized." [Ditto.]

(6) "I cannot undertake this government with this title of king." [To second Parliament, 1657.]

(7) "A constable set to keep order in the parish." [Cromwell's conception of his position.]

(iv.) Books for the further study of this period.

(1) **Sources.** Dr. Gardiner's *Constitutional Documents of the Puritan Revolution*, Carlyle's *Cromwell*, Milton's prose works, Harrington's *Oceana*, and Hobbes' *Leviathan*.

(2) **Some good small books.** (*a*) *Biography*: Harrison's *Cromwell*, Hannay's *Blake*, Corbett's *Monk*. [Macmillan, 2s. 6d. each.]. (*b*) *Constitutionalism*: E. Jenks' *Constitutional Experiments of the Commonwealth*, and G. P. Gooch's *English Democratic Ideas in the Seventeenth Century*. [Pitt Press, 5s.] (*c*) *Imperialism*: Seeley's *Expansion of England* and *Growth of British Policy*. [Part III.]

THE compilers of these Notes return thanks for suggestions received: they would be glad to receive from teachers information as to topics in which they feel the need of help, suggestions and criticisms. Letters should be marked outside "Oxford History," and addressed to the Editors of THE SCHOOL WORLD.

CURRENT GEOGRAPHICAL TOPICS.

By A. J. HERBERTSON, Ph.D., F.R.S.E., F.R.G.S.

The Boundary Changes of 1899 affecting Britain.

THE present is an appropriate time to note the changes in our political maps which have been brought about in the past twelve months. Three important agreements or decisions affect our country in different parts of the world. The first is the Franco-British agreement delimiting the respective spheres of influence in Africa, the second the Venezuela award, and the third the Anglo-German agreement relating to the Pacific and Africa.

Franco-British Agreement.—In March, 1899, the British and French Governments came to an understanding about territories in Northern Africa, and the frontier between their spheres of influence was drawn. Beginning in the tropic of Cancer at 16° E., the boundary runs to the south-east until it reaches 24° E., thus giving to France the Tarso or Tibesti mountains and Borku. From this point the line runs southwards to the boundary between the still little known regions of Wadai and Darfur, which it follows, but the boundary between 15° and 11° N. will lie somewhere between 21° and 23° E. South of 11° N. the frontier follows the Congo-Nile divide until the northern boundary of the Congo Free State is reached at the River Mbomu. Trade is to be free to Britain and France between 5° and 14° 20′ N.—*i.e.*, in Upper Ubangi, Bagirmi and Wadai in the French, and Bahr-el-Ghazal and Darfur in the British sphere.

Wadai and Bagirmi thus become French on the maps and Darfur British. France has now realised much of its ideal to paint in its own colours most of Northern Africa as far as regards the western two-thirds. These Sudan states are very valuable possessions, but it will be some time before they can be opened up, and France has an especially difficult task in its new territory, which is difficult to reach and will prove hard to administer successfully when occupied.

Anglo-German Agreement.—Since the Berlin Treaty of 1889 the Samoan or Navigators' Islands, so called because of the excellent seamanship of their inhabitants, have been under the joint "protection" of the United Kingdom, the United States and Germany, who guaranteed the independence of the Samoan government and the neutrality of the islands. This combined protectorate has led only to strife.

The Samoan Islands lie on the direct route from New Zealand to Hawaii, and are probably the most important group of islands in the South Pacific from a strategic point of view, especially as they contain the best harbour, that of Pango-pango, on the island Tutuila. Since 1878 the United States have held this harbour as a naval and coaling station. Britain and Germany propose to let the United States have Tutuila and all the islands of the group east of 19′ E. Germany's share in the archipelago will be the rest of it, including the islands of Savaii and Upolo. The last-named island is that best known to us, and on it is the chief town of the group Apia. Near it Robert Louis Stevenson lived and wrote, and teachers will find much about Samoa and its tall and fine-looking inhabitants in his "Vailima Letters" (1895), and about its disturbed history up to 1892 in his "Footnote to History."

The islands were discovered in 1768. The modern trade was largely developed by a Hamburg firm when Hamburg was an independent state. In recent years New Zealand and New South Wales have carried on a considerable trade with them. In 1897 the British shipping was 41,500 tons; American, 31,700 tons; German, 1,270 tons, excluding war vessels. There are about 400 whites, more than half British, on these islands, and a native population of about 34,000. The islands have been the scene of untiring labours on the part of our missionaries, and nearly all the inhabitants are Christians.

In return for giving up all rights in Samoa Britain receives two islands, Choiseul and Isabel, and numerous islets in the Solomon group, about 10° east of New Guinea. Germany also renounces any rights to the Friendly or Tonga islands—the most substantial, apparently, being the will to prevent Britain from having them under its protection. They are not of the same strategic or economic importance as Samoa, nor have they any harbour like Pango-pango. The natives are tall and like Samoans, and are said to be the finest type of Polynesians. A diverting and veracious account of them and the islands will be found in that excellent book, "The Diversions of a Prime Minister," by Mr. Basil Thompson. The greatest depths of the ocean have been sounded closely to the Tonga islands.

The most important part of the Anglo-German agreement is perhaps that dealing with West Africa, a region where, as we know to our cost, it is not profitable to have boundaries undefined. It refers to the square of neutral territory which hitherto has been found on maps between the northern parts of the Gold Coast Colony and Togoland. The river Daka will form the frontier to 9° N., and the boundary will be delimited to the north of this, so that Mamprusi and Gambaga are British and Yendi and Chakosi are German. On the whole, the neutral territory added to British possessions is greater than that taken by Germany, which, however, holds the chief centre of the region, Yendi.

For the time being our boundaries in Northern Africa are defined, except that with Abyssinia. Here, or in Morocco, the only independent states of Northern Africa, or in Egypt, are we likely to have political complications in the near future; but the teacher would do well to keep his attention on news from Wadai, from which centre disturbances may well spread eastwards or westwards to British territory, resulting in yet another struggle between cross and crescent.

Anglo-Venezuelan Arbitration Award.—The Venezuela arbitration tribunal has issued its award, with the result that the later and more comprehensive "Schomburgk line" has been fixed as the British Guiana-Venezuelan boundary, except for a strip of coast immediately east of the Orinoco delta, and for a small region between the head stream of the Cuyuni and its tributary the Wenamu. The boundary between our Guiana territory and Brazil is still to fix.

The most important boundary problems in America are those of the Alaskan-Canadian frontier and the Newfoundland coast. These demand special notice, and will be discussed in an early number.

THE RESOLUTIONS OF RECENT CONFERENCES.

Headmasters' Conference.

The Headmasters' Conference was held on December 21st and 22nd, 1899, at the College of Preceptors, the Rev. H. W. Moss (Shrewsbury School) presiding. At the meeting of the first day the following resolutions were adopted :—

(1) That, in the opinion of this conference, it is important that the local authorities to be constituted for educational purposes should have charge, by the grouping of counties and county boroughs, of areas sufficiently large to permit of complete organisation of educational work.

(2) That this conference heartily sympathises with the establishment of professorships, lectureships, and other university or collegiate agencies for the training of secondary school teachers, and presses upon all those preparing for the profession the importance of systematic training in the theory and practice of education.

(3) That this conference is of opinion that, after the expiration of five years from the commencement of the Board of Education Act, no new member of the profession should be qualified for a place on the register of secondary teachers who has not undergone a systematic course of training.

(4) That this conference advises its members to anticipate the inspection of schools, provided under clause 3, sub-section 1, of the Board of Education Act, 1899, by placing their schools forthwith under voluntary inspection by one of the universities, or other existing organisation; and that the committee be instructed (*a*) to ascertain whether and how far the English universities would severally be prepared to undertake the inspection of secondary schools; (*b*) to gather information about the cost of inspection and other relevant details; and (*c*) to draw up a report on the whole subject, and circulate it among members of the conference.

(5) That the committee be instructed to approach the universities with a view to diminishing the evils that arise from the too indiscriminate admission of boys to pass examinations prior to entrance into the universities.

(6) That it is desirable that in any scheme of public inspection of schools the subject of music be included.

At the second day's meeting of the Headmasters' Conference the resolutions adopted were as follows :—

(1) That this conference regrets the recent unexpected changes in the regulations under which commissions in the Army may be obtained by officers of the Militia, in so far as the literary qualifying examination is concerned, and refers the matter to the committee in the hope that they may induce the War Office to reconsider the question.

(2) A resolution affirming that an improvement is desirable in the methods of teaching modern languages in English schools.

(3) That the Civil Service Commission be asked to fix for every examination conducted by them a pass standard, and to issue, on such terms as they think fit, certificates to candidates who reach such standard.

(4) That this conference, whilst recognising with gratitude the efforts of the colleges of Cambridge and most of the colleges of Oxford to meet the wishes of the Headmasters' Conference, desires once more to place on record its continued dissatisfaction with the present system adopted by most of the colleges of Oxford and Cambridge by fixing their entrance scholarship examinations before the Christmas vacation as prejudicial to the cause of education, and requests the committee to send a copy of this resolution to the heads of colleges of Oxford and Cambridge.

The Rev. G. C. Bell (Marlborough College) submitted a paper on the Teaching of English at Public Schools, which we publish on p. 53. It was resolved that Mr. Bell's paper should be published for the use of assistant-masters.

The Modern Language Association.

At the annual general meeting of the Modern Language Association, to which we also refer on p. 63, several resolutions of general interest to teachers were adopted by the meeting. Among such resolutions the following may be noted :—

(1) That the Modern Language Association, viewing the general neglect of German in our schools with deep regret, both on account of the practical importance of this language and the mental training which its study affords, is of opinion that the compulsory study of both French and German is desirable in all secondary schools, and indispensable in schools other than classical, and upon modern sides.

(2) That the teaching of modern languages should follow the efficient teaching of the mother tongue.

(3) That all examinations in modern languages should include a *viva voce* test apart from dictation.

(4) That set books prescribed by an outside authority should be abolished in all external school examinations in French and German.

(5) That it be an instruction to the committee to formulate the principles of reform in modern language examinations, and to place them with practical suggestions before the various examining bodies, after they have been considered at the next meeting of the Association.

Incorporated Association of Headmasters.

The annual general meeting of this association was held on January 10th and 11th. Dr. James Gow, of Nottingham High School, the president for the year, occupied the chair. A number of resolutions were adopted, including the following, which were discussed at the first day's meeting :—

(1) That for the purposes of secondary education the area to be administered by the local authority should be not less than that of a county or county borough; and (2) That adjoining counties and county boroughs should have power to unite for such purposes.

(3) A resolution to the effect that the local education authority hereafter to be established should have the general control of primary, secondary and technical education of the local area, it being provided that there should always be power to appeal from the local to the central authority, and that the local authority should not directly administer any school or educational institution.

(4) That such local education authority should be invested by statute with definite powers over schools of all kinds, however administered, within its own area, such statutory powers to vary with the nature of the administration of the schools or institutions concerned.

(5) That, in the opinion of this association, it is desirable that, without interfering with the existing powers of local authorities, the main inspection of secondary schools should be conducted by, or on behalf of, the Board of Education.

The second day's gathering was almost entirely given up to a discussion of the question of the training of teachers, and the following resolution was adopted :—

"That this association heartily sympathises with the establishment of professorships, lectureships and other university or collegiate agencies for the post-graduate training of secondary school teachers, and presses upon all those who are preparing for the profession the importance of systematic training in the theory and practice of education, with special reference to secondary schools. It is further of opinion that, after five years from the commencement of the Board of Education Act, no new member of the profession should be qualified for a place on the register of secondary teachers who had not undergone some such systematic course of training."

Assistant-Masters' Association.

At the annual general meeting of this association, held on January 13th, and presided over by Mr. J. L. Norton, it was announced that the membership has now reached 1,400, of whom 266 are graduates of the University of London, 261 are Cambridge, and 217 are Oxford graduates. Of the total number of members only forty per cent. are non-graduates.

A considerable amount of the business which occupied the attention of the meeting was concerned with the rules of administration of the association. But several points of more general interest were discussed. The provisions of the bill which the association proposes to promote in Parliament next session were explained, and the following resolution was, after some discussion, adopted :—

"That clause 22 of the Endowed Schools Act, 1869, and clause 4 of the Board of Education Act, 1899, should be amended so as to allow all headmasters and assistant-masters a right of appeal to the Board of Education, acting through the consultative committee, in case of dismissal ; and that the association should approach the Headmasters' Conference and the Incorporated Association of Headmasters with a view to drawing up a concordat affecting the professional custom of giving assistant-masters three months' notice of dismissal, expiring at the end of the term."

A resolution to the effect that commercial instruction in secondary schools must have as base and lateral support a course of liberal education in which due prominence is given to modern linguistic and literary studies was carried after an interesting debate.

Association of Organising Secretaries.

The annual general meeting of the Association of Directors and Organising Secretaries for Technical and Secondary Education was held on January 17th at the Imperial Institute. Mr. Macan, the retiring president, occupied the chair at the morning sitting, when Mr. W. Hewitt was elected president for the year 1900. The following were among the resolutions adopted :—

(1) That the Sanitary Inspectors Examination Board, having no representatives upon it of either local authorities or educational institutions, is unworthy of public confidence.

(2) That this association is unable to understand the action of the Local Government Board in declining to place on the above sanctioned board representatives of the City and Guilds Institute, the Association of Technical Institutes, and this association.

(3) That the interests alike of municipal government and of educational efficiency and harmony demand that in the constitution of local authorities for secondary education these should be (*a*) identical with the local authorities for technical education, and (*b*) should consist of members of the councils of counties and of county boroughs, with a minority of outside persons of educational experience freely co-opted as regards the administrative counties either by the councils or by the municipal majority of the committee.

(4) That, in the interests of the effective local administration of education, it is essential that the statutory areas for the local authority responsible for secondary and technical education shall be none other than the ordinary municipal areas of the county councils and county borough councils, but that free power should be given to authorities in charge of these areas to combine for specific purposes.

ITEMS OF INTEREST.

GENERAL.

THE English Education Exhibition was opened on January 5th, at the Imperial Institute, by H.R.H. the Prince of Wales. At the opening ceremony the Duke of Devonshire presided, and presented an address on behalf of the Committee of Management, setting forth the objects of the Exhibition. H.R.H. the Prince of Wales replied in a speech full of suggestiveness, in which the interest of the Royal Family in English education was referred to with considerable satisfaction. The Exhibition took its origin at a meeting of members of the principal bodies concerned with primary, secondary, technical, and university education in England, convened at the Foreign Office in June, 1898, by the educational section of the Royal Commission for the Paris Exhibition, 1900. The general feeling of this meeting was that the best way to secure the proper representation of English Education at the Paris Exhibition was to organise a preliminary educational exhibition for England in London in the present winter, and the meeting thereupon appointed a committee to organise such an exhibition. The present exhibition is the outcome of the labours of the committee, and from it the English educational exhibits for Paris will be chosen. As the space available for these exhibits at Paris is limited, only a portion of the exhibits at this exhibition will be forwarded to Paris.

Of the exhibits themselves it is not necessary to say much. Those teachers who have been unable to visit the exhibition will find detailed information of every section of it in the "Catalogue of Exhibits," published by Messrs. Eyre and Spottiswoode at 1s. It is not surprising that the public should have shown comparatively little interest in the exhibition, for it possessed none of the characteristics of a "show." But for acting-teachers anxious to compare the work done in schools of different grades, it would have been difficult to get together a more valuable and comprehensive collection. Many phases of English education exist, however, which cannot be represented by material objects, and the uninitiated person entirely dependent upon this extensive series of exhibits would obtain a very incomplete conception of what is comprised in our national system of education. Every rung in the educational ladder, which we are in the habit of flattering ourselves stretches from the public elementary school to the university, was adequately represented, and the committee should have little difficulty in making a typical selection to send to Paris.

A SERIES of Conferences, held in the East Conference Hall of the Imperial Institute during the time the Exhibition was open to the public, should be very fruitful in stimulating a more widespread interest in the numerous questions which centre round the problem of the reorganisation of English Secondary Education. Lectures, meetings for general discussion, and demonstration lessons have been held under the auspices of the chief educational bodies, including the Incorporated Association of Headmasters, the Teachers' Guild, the College of Preceptors, the London County Council Technical Education Board, the Association of Lectures in Training Colleges, the Geographical Association, the Froebel Society, and others. The discussions at most of the meetings have been well sustained, and though the "faddist" has been rather in evidence, we think that much good will result from these public exchanges of opinion. We are able to present our readers with a few important papers read at some of the meetings, and some others will probably be printed in future numbers.

THE Conferences of Science Teachers, held on January 10th and 11th, which were arranged by the Technical Education Board of the London County Council, were largely attended, and were from many points of view highly successful. The papers and addresses given by experts have doubtless provided teachers with much material for thought. But, in our opinion, the discussions which followed the papers were by no means so satisfactory. There was no lack of speakers, it is true, but the speeches were given at random, and in many cases had little or nothing to do with the subject in hand. Casual remarks of approbation, and vague reminiscences given on the spur of the moment, do not, as a rule, result in conclusions of value. Would it not more likely lead to increased efficiency in the class room and laboratory if well-known teachers of a particular subject were before the meeting provided with a full syllabus of each paper, and asked to prepare a short speech embodying their own experiences, whether favourable or otherwise, to the openers of the discussion? An interesting feature of last year's meetings was unfortunately not repeated. The collection of novelties in apparatus for the teaching of chemistry and physics, which was on view at Chelsea Polytechnic during the 1899 meetings, probably did more good than all the talking. Many science teachers expressed great disappointment at the absence of anything of the sort this year. The assortment of pupils' work in metal, and the permanent Prout-Newcombe natural history collection at Shoreditch, were rather sorry substitutes.

AT the annual meeting of the Association of Principals and Lecturers in Training Colleges under Government inspection, an address was delivered by the Bishop of London. The address was full of material for thought. So many good things were said that the work of selecting "tit bits" is a little difficult. The Bishop said he had been a teacher in his own way just enough to have discovered that the great function of the teacher, after all, is to occupy a position similar to that of a mustard blister. From his knowledge of the English boy, he had not been able to discover any means by which that boy can be induced to learn anything, except at the point of the bayonet. The boy begins with a deeply-rooted objection to knowledge; he dislikes knowledge for its own sake; he not only dislikes it, but he despises it, and how that dislike is to be got over is the great problem which the teacher of boys always has to face. The boy always regards his teacher and the subjects taught with contempt, whereas the girl has a mild and sometimes impetuous enthusiasm for her teachers. Speaking of the unpopularity of education, the Bishop of London made the sweeping statement that our public schools are institutions half-way between the barrack and the workhouse, and that well-to-do parents commit their children to them for a number of years, divesting themselves of all responsibility as to what happens there.

THE London Society for the Extension of University Teaching has arranged for courses of lectures by Professor Earl Barnes, late of Stanford University, California, on "The History of Education" and "Child Study." Ten lectures on the former subject are to be delivered (*a*) on Mondays at 5.30 p.m., in Toynbee Hall, E.; (*b*) on Wednesdays, at 5.30 p.m., in the High School, Norland Square, W. Ten lectures on "Child Study" are to be delivered (*a*) on Tuesdays, at 5.15 p.m., at the Bermondsey Settlement, S.E.; (*b*) on Thursdays, at 5.30 p.m., in the Northern Polytechnic Institute. We have on other occasions called attention to the interesting work which Professor Barnes has accomplished in Child Study, and when to this is added his reputation as an authority on general pedagogics, there can be little doubt that a good audience will assemble for each lecture. The first lecture of each series was given during the week commencing Monday, January 22nd.

THE Technical Education Board of the London County Council is prepared to receive applications for two scholarships, each of the value of £150 and tenable from Easter to Christmas, 1900, in some higher commercial institute on the Continent, from male teachers who are British subjects, ordinarily resident within the administrative county of London, and who are proficient in the language of the country which they propose to visit and in some branch or branches of commercial education. The object of the scholarships is to enable skilled teachers to become familiar with the organisation and methods of teaching which obtain in the higher commercial schools on the Continent. Forms of application may be obtained from the Board's secretary, and must be returned not later than February 10th. Mr. A. Kahn, who held one of these scholarships from Easter to Christmas last year, has been selected as head of the new commercial department at University College School, which is intended to provide, for boys who have had a good grounding in general subjects, a course of two years' study specially adapted to the requirements of commercial life. The Technical Education Board have decided to award, at an early date, twenty scholarships tenable in the commercial department of University College School.

AN article on "Out-of-Door Schools," by Miss Elizabeth Brown, in the January number of *St. Nicholas*, one of the best of the magazines published for young folks, is illustrated by twelve photographs of classes engaged in out-door lessons of different kinds. These twelve pictures have been selected from several hundred photographs showing Washington children undergoing instruction in the class-room and engaged in the out-of-school work which is so important a characteristic of education in the American capital. The photographs are intended for the educational section of the Paris Exhibition. In the examples to which we have referred the mixed classes and the lady teacher will probably first attract the attention of English teachers.

THE December number of the *Journal of School Geography* contains an article on "Geographical Laboratory Work" by Mr. W. H. Snyder, of Worcester Academy, Massachusetts, which should be of great assistance to those teachers who propose to take up the new physical geography syllabus recently issued by the Cambridge University Local Examination authorities. In view of several letters we have received, it is worth while to point out that the *Journal* can be obtained from Mr. W. Bee, 549, Lawnmarket, Edinburgh, price 7d. per number.

THE *University Extension Journal* calls attention in the January number to the University Extension Congress which is to be held in Paris next July in connection with the Exhibition. The authorities in Paris are proposing to invite the chief University Extension organisations all over the world to send representatives. The Congress, which has been fixed for July 30th, will also be open to anyone interested in University Extension work, on payment of a subscription of ten francs.

THE report for last session of the Oxford University Extension Delegates shows that 1,231 lectures were delivered by 34 different lecturers in 119 different local centres. The number of lectures marks an advance of 139 upon the figures of the previous year; the number of centres at work, an advance of 11; while the number of courses increased from 145 to 155. Even more noticeable than the gain in aggregate numbers of courses and lectures is the fact that the increase is much more marked in the longer than in the shorter courses. The number of six-lecture courses increased 6 per cent. only; of twelve-lecture courses, 10·5 per cent.; while those of twenty-four more than doubled in number.

IN the last examination in the Art, Theory, and History of Teaching, in connection with the London University, five candidates satisfied the examiners. It is interesting to notice that only one of the five was a man.

THE Committee of the Irish Literary Society (through the generosity of one of their Vice-Presidents, Mr. William Gibson) offer for competition two prizes, the first of fifty guineas and the second of twenty guineas, for an essay on the "Sieges of Derry and Limerick," giving an account of these events, drawing a comparison between them, and discussing their historical significance. The competition is open to every person (whether a member of the Society or not) who is under the age of thirty on October 1st, 1900. Every person intending to compete must notify the same to the Secretary of the Irish Literary Society, 8, Adelphi Terrace, Charing Cross, London, before July 31st, 1900. All essays are to be type-written on good paper, and on one side only of the paper, and to be sent in to the Secretary before October 31st, 1900. No essay is to exceed 10,000 words. Each competitor must write his or her name and address at the top of each page, and send in his or her baptismal or birth certificate with the MSS. All essays will in the first instance be read by a committee consisting of the Chairman, Secretary, and Treasurer of the Irish Literary Society. This committee will then submit twenty of the best essays for adjudication to the Lord Chief Justice of England and to the Right Hon. W. E. H. Lecky, M.P., who will, in case they disagree, appoint a third arbitrator. Special importance will be attached to literary style and evidence of original research, and each writer must cite the authorities on which his essay is based. The successful competitors will be expected to read their essays at a meeting of the Literary Society, whose property the successful essays will become.

THE annual general meeting of the Modern Language Association was held on Thursday, December 21st, 1899, when an address was delivered by the retiring President, Professor Skeat, in which he reviewed the work of the Early English Text Society, and traced the many valuable modern improvements made in the science of etymology to the study of phonetics, an almost unknown subject in England in 1864, when Professor Skeat took up the study of Anglo-Saxon. At the conclusion of the address it was announced that the members of the Modern Language Association felt they would like to offer Professor Skeat some tribute of their admiration for the many services rendered by him to English learning during the last thirty years. This tribute took the form of a portrait of Professor Skeat, painted by Mr. Charles Brock, of Cambridge, which it was hoped would hang in Christ's College. A testimonial was then presented, consisting of a replica of the portrait for retention by Professor Skeat and his family, of an album of the names of the subscribers, and of a surplus in money to be applied as Professor Skeat directed to the bringing out of some literary work in English. The resolutions adopted at this meeting and on the following day are given on p. 60.

AN examination is announced to take place on March 20th, 1900, for appointments to Engineer Studentships in Her Majesty's Navy. Intending candidates must make application for admittance to the examination on forms obtainable from the Secretary, Civil Service Commission, S.W., and must return them to him on or before February 15th, 1900. The limits of age are 14½ and 16½ years on May 1st, 1900. The examination, which is to be held at London, Portsmouth, Devonport, Edinburgh, and Dublin, is in the following subjects:—Arithmetic, Algebra (to quadratics of two unknowns), Euclid I.-III., English (handwriting, dictation and composition), Geography, English History, French, Natural Science (viz., mechanics with *either* physics *or* chemistry). The above subjects are compulsory. Drawing (freehand *or* geometrical) may also be offered, and *either* Additional Mathematics (up to elementary trigonometry) *or* German *or* Latin. Engineer students are trained for five years for service afloat as engineer officers. During these five years the parent or guardian of the student makes an annual payment of £40. There is an increasing weekly allowance of pocket-money to each student. On appointment as engineer officers the pay is 9s. per day, with prospects of an increase to £2 per day by promotion or length of service.

AN Open Competitive Examination for the situation of Clerk in the Operative Department of the Royal Mint will be held in London on February 20th, 1900. Forms of application for admission to the examination may be obtained from the Secretary, Civil Service Commission, S.W., and must be returned to him on or before February 7th. The limits of age for this situation are 20 and 25, and candidates must be of the prescribed age on the first day of the competitive part of the examination. Candidates will be required to show what technical education and practical training they have undergone to qualify them for the duty of taking charge of machinery in an engineering establishment and superintending workmen. Evidence on these points must be sent with the form of application. If such evidence should prove *primâ facie* satisfactory the candidate will be admitted to the examination, subject, in the case of his being successful in the competition, to such further inquiry, and the production of such further evidence, as may be necessary. The examination will be in the following subjects, viz.:—(1) Handwriting and Orthography; (2) Arithmetic; (3) Machine Drawing and Construction; (4) Applied Mechanics and Mechanism (including a practical knowledge of engineering work); and (5) Applied Electricity. All candidates must qualify in subjects numbered 1 and 2, and in two of the remaining subjects. No candidate may take up more than two of the subjects numbered 3, 4, and 5. A fee of £1 will be required from each candidate attending the examination. The salary of a clerk in the Operative Department of the Royal Mint commences at £135 a year, and rises by annual increments of £7 10s. to £190 a year, and thence by annual increments of £10 to £300. The hours of work are from 8 a.m. to 6 p.m.

SCOTCH

AT the annual meeting of the Scottish Modern Languages Association Dr. McKay, M.A., Ayr Academy, was elected president, and Mr. J. Schilling, Stirling High School, secretary. A paper by Professor Eggeling, Edinburgh University, on "Modern Languages in Scottish Schools and Universities," was, in his unavoidable absence, read by Dr. Schlapp. In the course of his paper Professor Eggeling traced the development of the teaching of modern langaages during the last twenty-five years in Scotland, and congratulated the association on the enormous advances that had been made in methods and results during that period. The following motions in regard to the Leaving Certificates Examination were afterwards unanimously adopted.—(1) That the French papers show an improvement on those of previous years, more particularly the Honours paper, but that there is a manifest want of correlation between the different grades in regard to the difficulty of the questions, and that there is the same want of balance between the optional questions in the papers set. (2) That in the Higher Grade paper some of the questions on literature are not adapted to the capacity and progress of the pupils. (3) That no questions should be set in Commercial French in the Lower Grade papers.

THE Annual Congress of the Educational Institute took place this year in the Free Assembly Hall, Edinburgh, on the 3rd and

4th inst. The Congress programme was an exceedingly varied one, and several papers dealt with questions of pressing moment. Councillor Harrison opened what proved a most interesting discussion on "Commercial Education." He adversely criticised the attempt to institute commercial schools in this country on the lines of the French "Bureaux du Commerce." Playing at business, which such attempts involved, was the worst possible training for the stern realities of actual business life. Those intended for business should be trained in the spirit of the century in which they lived, and in such a manner that they would bring a critical intelligence to bear on all the operations of business life. In the discussion which followed, several speakers said that the universities were the great stumbling-block to putting commercial education on a satisfactory basis. Notwithstanding recent changes, these institutions were still essentially mediæval in their atmosphere and influence, and the classics were hedged round with the same divinity as of old. French and German were only admitted on sufferance, and could not compete on equal terms with the classics.

MR. MALCOLM, organising director of Technical Education in Lanarkshire, gave at the Congress an exceedingly able and timely paper on "The Simplification of Educational Control." It is an open secret that the Scotch Education Department are at present busied with the details of a Secondary Education Bill for Scotland, which is to bring order out of the chaos into which matters educational have drifted in recent years. Mr. Malcolm gave a vivid picture of the jumble of authorities, grants, and schemes which constitute the present secondary education patchwork system. Their minimum demand was that the forthcoming Bill should set up not more than two local authorities—one a County Board for all higher education with power of rating, the other School Boards of extended area for elementary education.

IN a circular dated December 25th, the Scotch Education Department intimate "that they propose, as an experiment, to issue Group Certificates to those candidates who have been receiving higher instruction for not less than four years, of which one must be English, one an ancient or modern language, and one mathematics, or in the case of girls, higher arithmetic. Two certificates of the lower grade will, for the present, be accepted in lieu of the fourth certificate of the higher grade." Teachers have for many years past been asking for the institution of group certificates, and the present concession will be heartily welcomed by all classes of teachers. It is accepted, however, only as an instalment of a more complete reform—the abolition of certificates for single subjects save in the honours grade. Two objections will probably be made to the Department's scheme: (1) That the four years' limit will exclude from the advantage of the certificate a large percentage of pupils, more especially of boys. (2) That the number of subjects in the group is too great.

THE Glasgow and West of Scotland Joint Committee on Secondary Education, comprising representatives from the Secondary Teachers' Association, the Educational Institute, the Teachers' Guild, and the leading School Boards, have drawn up and forwarded to the Department important resolutions on the constitution and duties of County and Burgh Committees administering secondary education in Scotland. Notwithstanding the supposed diversity of interests of the various members constituting the committee, perfect unanimity has characterised the findings. The committee resolved that steps should be taken to consolidate the administration of secondary education in Scotland, and to combine under one management, for each county or separate educational district, all public funds available for such education. Among the duties assigned to County and Burgh Committees are:—(1) To make provision where necessary for secondary education, and to organise, differentiate, and correlate schools already existing, so as to increase their efficiency and prevent undue competition and overlapping. (2) To have the power of rating through County and Burgh Councils, or otherwise, for secondary education, and to administer, according to the schemes approved by the Department, all sums so received, and all monies paid from the National Exchequer for purposes of such education. (3) To act, when called upon, as a Court of Appeal in cases of dismissal of teachers. N.B.—In all cases where the term "secondary" is used, it should be understood as including "technical."

A CIRCULAR has been issued on behalf of the Scottish Modern Languages Association, in which it is stated that that body is on the point of petitioning the University Courts of the Scottish Universities to bring about an alteration in the Bursary Ordinance, "so that all candidates for bursaries, with the present choice of subjects, may be enabled to compete for the same total of marks." The request for a change is based upon the contention that the Bursary Ordinance, allowing one part of the candidates to compete for a higher maximum of marks than another, is unjust in itself; that the ordinance makes it impossible for a candidate who does not take Greek to obtain a bursary; and that the increasing scarcity of students knowing both French and German precludes all development of the newly-established Honours Schools in Modern Languages in the Scottish Universities, and with it the desirable supply of Scottish teachers of modern languages with a proper university training.

WELSH.

SINCE its opening in 1884 the University College, Bangor, has had to be content with one of the larger hotels of the old coaching days for a habitation. Over the old solidly-built stables and coach-houses there have been built some of the ugliest, but best fitted-up laboratories in the kingdom. The old bar-parlour became the Principal's room, and sundry bedrooms were knocked into a Greek lecture-room peopled by busts of Homer, Aristophanes, Plato, and others. Other equally suitable arrangements were made to accommodate the seventy students who entered on the day of its opening. The seventy students have now increased to about three hundred men and women who have imbibed modern philanthropic ideas with regard to overcrowding and the housing of the poor. It is consequently necessary to think of a new and finer abode, and steps are being taken to open a fund for the erection of a building worthy of the three hundred and the old cathedral town, the scenery of which is perhaps the most varied and beautiful in Wales. This will mean an additional effort for North Wales—and how great its efforts on behalf of education and its religious denominations have been during the past quarter century none but Welshmen really know. Carnarvonshire alone, as Principal Reichel lately remarked, has contributed over £16,000 in voluntary subscriptions within the last five years to intermediate education. Such a sum would, the Principal says, be equivalent to a *sevenpenny rate* upon the county, and the great bulk of this came from the pockets of the middle and working classes.

FROM the Chief Inspector's report it appears there are at present 93 County Schools in Wales. Of these 50 are Mixed or Dual Schools, 22 for boys only, and 21 for girls only. Several still have to carry on their work in temporary premises, but it is expected that about 75 will be able to begin work next term in new and permanent buildings. In spite of the fears, so frequently expressed, that there were too many schools for the needs and possibilities of the country, the number of pupils has steadily increased. In 1897 there were 6,427 pupils, in 1898 there were 6,912, and in 1899 there were 7,390; that is to say, there has been an increase of 1,000 pupils in three years' time. The proportion between boys and girls has remained very uniform. There are at present 3,877 boys to 3,513 girls. Though the increase in numbers is so satisfactory, there is great cause for regret that pupils do not stay long enough at school. Probably the majority remain only one or two years at most. While there are 6,021 pupils under sixteen, there are only 1,361 above that age.

In the opinion of the Chief Inspector, a serious danger threatens these schools. Pupils stay for so short a time at school that there is a temptation for headmasters, in their anxiety for the success of the school, to sacrifice "sound educational methods" to the "securing of 'immediate results.'" The only visible "immediate results" will be the Central Board Leaving Certificates, and the danger is that everything should become subordinate to these. The public take a keen interest in these schools, the schools are situated close to one another, and they all take the same Central Board Leaving Examination. It is natural, therefore, that there should be considerable comparison in the press and in private. Hitherto the only test that has been applied in such comparisons has been that of examination results, with the inevitable result that healthy rivalry shows signs of degenerating into competition and advertisement "puffing." Time and the steadying hand of the Chief Inspector will, it is to be hoped, tone down this somewhat feverish activity.

IRISH.

The Irish Schoolmasters' Association held their annual meeting in Dublin at the end of December. The President, Mr. Finch, delivered an address on the necessity of improved science-teaching in Irish Secondary Schools. He pointed out the value of science as a mental discipline, and its usefulness in many pursuits in after life. Under the Intermediate system, from the unsuitable nature of the programme and examination (which is wholly written), and the small monetary encouragement given to it, physical science has been almost extinguished in Irish schools. It has been little cultivated, too, by the heads of schools, few of whom have provided practical teaching in it, or led their pupils to take it up.

The evil has long been condemned by scientific men and the general public; and afterwards, at the dinner of the Schoolmasters' Association, Professor Fitzgerald, F.R.S., referred to the same subject. He said that the Board of Trinity College was now willing to place physical science more on a level with literary subjects, and to give entrance examinations in it. He used one argument which may rouse Irish headmasters to take more interest in science teaching than they have hitherto done. In the five years' course now necessary for medical students, one year may be taken out in studying natural science subjects in any school and college suitably equipped for teaching them. This is taken advantage of in English schools, but so far neither the Irish schools nor Trinity College have made provision for it, and the whole five years have to be spent after entering college. Trinity College is now willing to institute the necessary examinations, but unless Irish schools supply the teaching, boys intended for medicine will undoubtedly be sent to English schools, where they can get adequate science teaching.

No steps, so far as has transpired, have yet been taken to give effect to the recommendations of the Irish Intermediate Education Commission. The Commission reported last August, and can do no more. Their new scheme requires some changes in the Intermediate Act to enable them to use the funds for inspection, and in some other ways. Unless a bill is brought into Parliament for this purpose, the scheme cannot be carried out by the Intermediate Board. It has been under the consideration of the Irish Government, but in the present disturbed state of public affairs, it seems unlikely that time and attention can be given to the matter. It is to be hoped that the Irish members will take it up, and not allow reform to be stopped from want of a very small amount of legislation.

The only public criticism so far of the scheme was made just before Christmas by Mr. Dick, of Foyle College, Londonderry, at the annual meeting of the college. He has always strongly disapproved of the Intermediate System, and in his speech expressed disappointment that more thorough reforms had not been recommended. He believed, as long as the endowment was given on the results of examinations, the same defective system of education—overwork, cramming and merely mercenary ideals—would remain. He lamented that the youth of Ireland should be injured by such a type of education being imposed on the whole country. He pointed out that the board could not obtain examiners who would carry out their new "general examination" on the lines they had sketched in their report. While all this may be true, the Commission could hardly be expected, in the face of the belief in examinations and the prejudice against inspection felt by most Irish heads of schools, to sweep away examinations suddenly, and were the new powers they seek granted, they could gradually introduce further improvements under their new scheme.

The Irish Department of Agriculture and Industries will definitely begin work next April. It is possible that it may have an influence in improving science teaching in the schools, in making Irish education broader, and in turning the attention of young men more to scientific and commercial pursuits instead of, as at present, to Government appointments, clerkships and the professions. One of its functions will be a committee of education, on which representatives of the Deparment will sit with representatives of the Intermediate Board and the Board of National Education. In this way the needs and openings in agriculture and industry will be brought directly into touch with the secondary and primary systems of general education.

In primary education the National Board have been framing methods by which the recommendations of the recent Manual Instruction Commission can be carried out. Here again, however, these reforms, intended to make primary education broader, more practical, and a training of the hand and eye, are waiting upon Government. A grant from the Treasury is required, and this has not yet been given. It is to be hoped that the Government may not stop reforms which are urgently needed for the good of the whole country.

FOREIGN.

An International Congress of Technical Instruction will be held in connection with the Paris Exhibition in the Palais des Congrès from the 6th to the 11th of August. The President is M. L. Bouquet, the General Secretary M. Michel Lagrave, and the Assistant-General Secretary M. Emile Paris. The Congress is to be divided into two sections:—(1) Industrial Education; (2) Commercial Education.

Teachers' College, in connection with Columbia University, has established a serial publication, *Teachers' College Record*, to deal with the practical problems of elementary and secondary education and the professional training of teachers. The purpose of the serial is to give the faculty and students of the College a comprehensive view of the actual workings of the school of observation and practice, to provide graduates of the College with a means of prolonging their professional studies, and to acquaint the public generally with the theory and practice of teaching adopted in Teachers' College and the school in connection with it. The first number of the *Record* was published on the first day of this year.

THE Educational Report of the North-west provinces of India and Oudh for 1898-99 says that the year can be justly regarded as "one of progress and recognition of defects." There has been an increase of 20,000 in the number of pupils receiving instruction, and it is satisfactory to learn that efforts are to be made to abolish the evil results consequent upon over-examination. The importance of physical education is rightly being insisted upon, and we notice with satisfaction that a large number of special instructors for this purpose have been appointed by different boards. Higher education has received due attention, and it is worthy of notice that in more than one college the increased attention which has been given to instruction in science has been followed by a diminished interest in the study of Sanskrit.

THE *Bombay Educational Record* says that the results of the Simla Conference concerning the Tata Indian Research Institute, to which we referred in our last issue, have been published, and that the Institute is to be situated either in Bombay or Bangalore. It does not appear clear whether by "Bombay" is meant the city or the presidency, but presumably the former is intended. If Bombay is actually selected, the question of obtaining a suitable site will furnish some difficulty. If, however, "Bombay" can be interpreted more liberally, suitable localities and sites could easily be found in the Salsette Hills.

THE training of teachers has received considerable attention in Japan. Each imperial city and prefecture, of which there are together 50, possesses one ordinary normal school furnished with an elementary school for training pupils in the methods of instruction. The course of study extends over four years in the case of males and three years in the case of females. The total number of pupils in these schools was in 1897, 6,820. Besides these ordinary there are two higher normal schools, one for males, the other for females. These institutions are designed to prepare pupils as directors of, and instructors in, ordinary normal schools and ordinary middle schools, and at the same time to enable them to prosecute investigations into the methods of general education.

THE *Review of Reviews* calls attention to a modern Language International Congress which will sit in Paris from July 24th till July 28th, 1900, and will discuss:—(1) Methods of teaching. (2) Modern language teaching from a technical and commercial point of view. (3) The proper means of spreading the knowledge of modern languages and facilitating international intercourse. These sections have many subdivisions, from the arrangement of time-tables to clubs, literary culture, scholarships, and exchange of homes. Full particulars can be obtained from the Secrétaire Générale du Congrès des Langues Vivantes, Hotel des Sociétés Savantes, Rue Serpente 28, Paris. Various French teachers, however, consider that a necessary preliminary is to be quite clear as to the aim of the teaching before discussing methods, and the editors of the *Revue Universitaire*, 5 Rue de Mézières, Paris, invite teachers of modern languages to communicate their opinion on these points:—(1) Should modern language teaching in secondary schools be practical or literary? (2) Should it be the one or the other according to whether the class is on the modern or classical side? (3) Is it possible to combine practical teaching with literary culture? British modern language teachers have very decided views on these points, and it is to be hoped that they will communicate them to the editors in question.

THE Prussian Pedagogical Society has recently published some statistics which show that the provinces where the compulsory Education law has been enforced have the fewest criminals. It is also evident that improvement in the schools and increased strictness in obligatory attendance have been followed by a considerable diminution in crime. How great the difference is in respect to this matter in various sections of the country is apparent from the fact that in West Prussia there are 1,926 criminals to the hundred thousand inhabitants, in Hohenzollern only 751.

CURRENT HISTORY.

THE Transvaal War is still with us, almost to the exclusion of every other topic. Our thoughts naturally go back to 1870, and the French cry of "*à Berlin!*" which was to be realised in so unexpected a way before the close of that year, so critical and important in European history. There were many amongst us, we fear, who went to war with the Boers, like M. Ollivier, "with a light heart," and thought we should ere now have dictated terms of peace in Pretoria, even if we did not find the war without any enemy with whom to make treaty at all. But the history of our dealings with "Holland" in the past should have taught us better than this. Have we forgotten William the Silent and the men to whom Elizabeth gave grudging help, and who in return did the hardest part of the defeat of the "Armada"? Have we forgotten the story of the Amboyna "massacre" and the Dutch wars of the 17th century? We did not always win the battles in those days, and our defeats were not entirely due to the misdeeds of that scapegoat, Charles II.

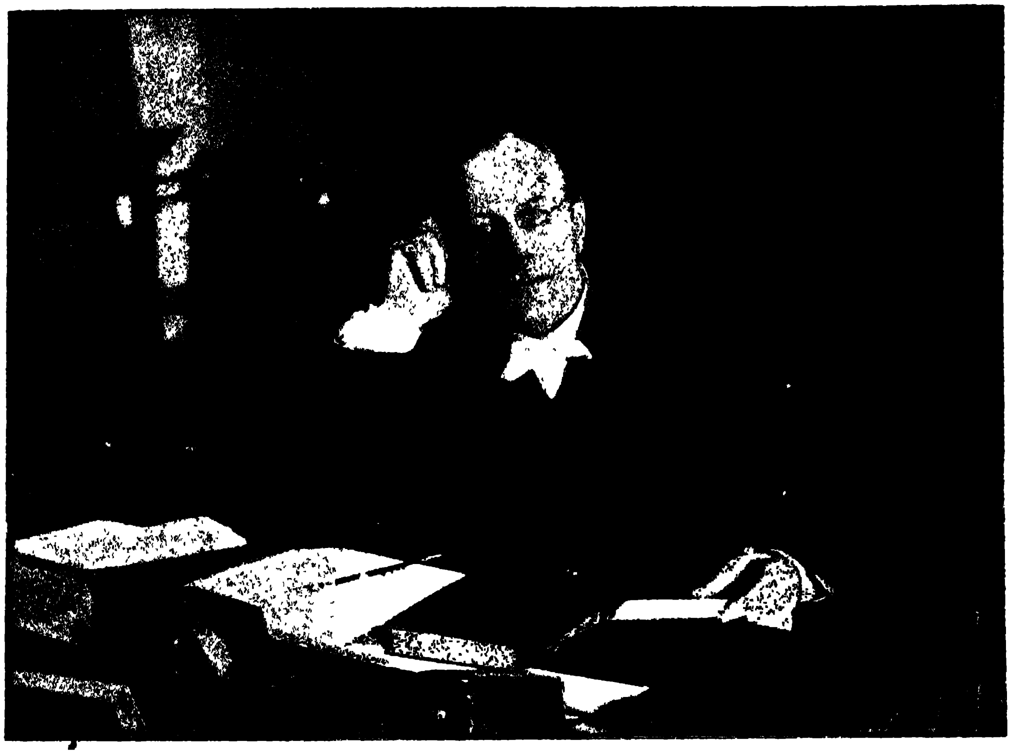
IT is true that in the 18th century Great Britain the greater grew the United Provinces the less. But a little reflection on the wars of 1688-1713 will provide part of the reason. The United Kingdom and the United Provinces both came out of that conflict with France with their independence secure. But the burden of the struggle had fallen in more ways than one with unequal strain on the smaller of the allies, and they were exhausted in the attainment of the "Protestant liberties of Europe." We must remember that we are fighting the descendants of the pick of those two old antagonists, men whose forefathers in France and Holland fought, like our own Puritans, Bible in one hand and sword in the other.

MORE than once, Italians have been lynched in the U.S.A. The Italian Government has naturally remonstrated and sought compensation from the Federal Government. But this Government has been compelled to reply that they have no jurisdiction in the matter, for each State in the Union has reserved to itself the control of criminal matters. And Italy knows that if she were to address her complaints to the "State" authorities, they would reply, quite legally, that diplomatic intercourse is forbidden to them by the terms of the constitution. It is a curious and enlightening illustration of the working of a Federation. But we notice that the "United States Executive" have been making "efforts to remedy, as far as possible, the existing defects," and that the recent Presidential Message to Congress has proposed to "endow the Federal tribunals with competence to deal with cases involving international responsibility." Note how constitutional history grows out of international!

THE New York correspondent of the *Times* writes *àpropos* of this Presidential Message:—"Since Lincoln, no President has had to deal with matters so momentous. Since Madison, no President has handled public affairs more timidly. . . . Congress listens in vain for clear conclusions or definite advice on those points which are of national and international importance." See, again, how constitutional history (in this case, the growth or decline of monarchy, *i.e.*, of the power of the President) depends on matters of international or *quasi*-international history! And yet our text-book writers think they can write English constitutional history as if England were outside the world altogether.

FLOREAT ETONA—ESTO PERPETUA.[1]

"ETON relies upon its traditions of honour, its self-regulated independence of spirit, and, above all, its power of inspiring a life-long affection and an unseverable bond of union among its boys. Age does little to weaken the love of Eton. Once an Eton boy, always an Eton boy, even, like Horace Walpole, in the sere and yellow leaf of life." So writes Mr. Lionel Cust towards the end of his loving account of his old school. Every chapter of the book supplies abundant evidence of its author's deep affection for the greatest, though not the oldest, of English public schools; and the addition of yet another to the numerous histories of this foundation of "the good and holy youth," Henry VI., seems most easily accounted for by the inspiration to which Mr. Cust directs attention.



From a photograph by Russell & Sons, Windsor.]

THE HEADMASTER OF ETON—REV. EDMOND WARRE, D.D.

The immediate object of the author was to assist in the completion of the particular series to which the volume belongs. He makes no pretence of having added "anything of importance to the history of Eton College, as set forth in Sir H. C. Maxwell-Lyte's monumental work." Again and again Mr. Cust modestly speaks of his work as "a slight sketch," but we have no hesitation in saying that it will take a prominent place as a very entertaining sketch, brimful of information about old Eton customs and distinguished Etonians.

We have found the chapters on "Reforms at Eton" and "Eton under the New Statutes" particularly interesting. The work of the Royal Commission of 1861, appointed "ostensibly to inquire into the working of the nine chief public schools, but with the obvious intention of subjecting Eton to the most assiduous and searching criticism," lasted for two-and-a-half years, but their report was not published until 1865. It was not till 1868 that an Act was passed appointing Commissioners to frame new statutes for the chief public schools. In 1870 a new governing body was appointed for Eton College consisting of the Provosts of Eton and King's, *ex-officio*, and of five members to be nominated by the two Universities, the Royal Society, the Lord Chief Justice, and the Assistant-masters. These governors could, at their discretion, co-opt two, three, or four additional members.

By the new statutes the Headmaster is appointed by the Governing Body, and has consequently been "relieved from the control of any personal influence." All assistant masters are appointed by him, and it is worthy of remark that out of fifty-six only eight are clerks in Holy Orders. Speaking of the assistant masters, Mr. Cust says: "Mere scholarship and University distinctions have ceased to be the sole qualification for the post of assistant-master at Eton. High character, and in many cases experience of teaching elsewhere, have been the chief causes of selection in the last few years. The position of schoolmaster has been raised in the social scale. Young men of gentle birth and refined breeding are no longer ashamed to join the ranks of the teacher. The change has been of incalculable advantage to schools, and there is no faculty so generally inherent in the English boy, and so readily employed by him, as that of discerning at once whether his teacher or his comrade is or is not a 'gentleman.'"

It is unnecessary to refer to more of the numerous topics of interest which we have marked in reading the history; we must unwillingly content ourselves by simply urging those who want to become acquainted with the incidents attending the growth and development of a school, founded four hundred and sixty years ago, to secure the book itself. It is readable throughout, well illustrated, and fully deserves a place in every school library. The accompanying illustration from the volume we owe to the kindness of Messrs. Duckworth & Co.

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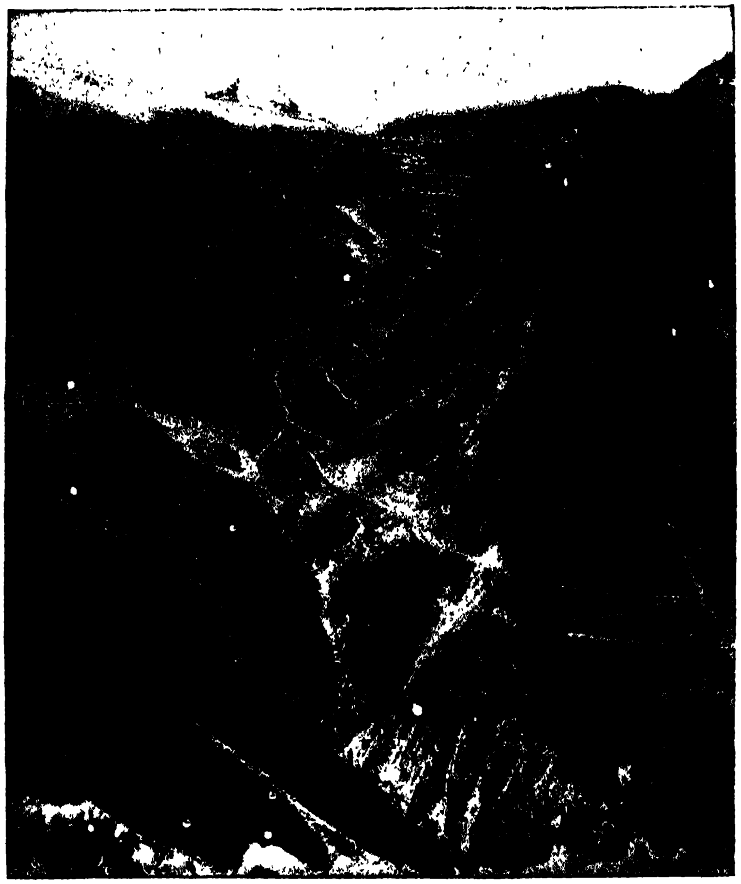
[1] "A History of Eton College." By Lionel Cust. xvi.+318 pp. (Duckworth & Co.) 5s. net.

ON THE GEOGRAPHY OF EUROPE.[1]

THIS is a book which teachers interested in geography should read. It deals with the most interesting part of the world — except, perhaps, the part which will be dealt with in the second volume—and it is the work of an experienced geographer and practical educationist. As a piece of intelligent and discriminating compilation, it is deserving of high praise, and as the reader proceeds he will gradually discover that the order in which the facts are marshalled and the degree of detail with which they are discussed throw a clear light on the individuality of countries and the character of peoples.

Although a geographical book, there is a great deal of history in it; in fact, history is employed as the key to modern geography, while history itself is shown to have been influenced by the physical configuration of the countries. The general characteristics of Europe as a whole are made clear by the aid of a series of good maps, some of which are new and of exceptional value; and the detailed descriptions of the countries of Europe (except Scandinavia, Holland, Belgium and the United Kingdom, reserved for Vol. II.) are illustrated by a number of characteristic views and other pictures, as well as by special maps. How striking some of these views are the accompanying illustration will show. It represents the summit of the Stelvio Pass, with the road winding in great zigzags up the mountain side.



SUMMIT OF THE STELVIO PASS.

Recognising that Europe commenced to be the home of civilised man on the shores of the Mediterranean, and that Rome was the first Power to spread the influence of civilisation over the continent, Mr. Chisholm treats the geography of Italy first and in greatest detail. Here there are at least three strata of geographical history to be considered corresponding to the periods of the Roman Empire, the mediæval republics and the modern kingdom of Italy, and all three are treated simultaneously, yet without confusion. The other Mediterranean peninsulas are then described, and afterwards the countries of Central and Eastern Europe.

Valuable hints are given as to the pronunciation of difficult place-names, and as to the forms of the same name used in different languages. Many vexed questions as to the "right spelling" of names are set at rest by the demonstration that there are several right spellings, or even several different names for the same place, all equally correct.

Statistics are for the most part confined to footnotes, and the text is always readable, and often extremely graphic in its descriptions.

There is a full index, in which the excellent plan is followed of indicating by special type the reference to the most detailed notice under each heading.

H. R. M.

RECENT SCHOOL BOOKS.

Modern Languages.

Dent's First German Book. By S. Alge, S. Hamburger and Walter Rippmann. 235 pp. (Dent.) 2*s.* net. *Dent's German Reader.* By S. Alge and Walter Rippmann. 265 pp. (Dent.) 2*s.* 6*d.* net.—Under the guidance of a competent and patient teacher, pupils using these two books will receive an inspiring introduction to the German language. In the first volume the lessons are based upon the Hölzel pictures of the Seasons, each lesson consisting of descriptions of persons and objects in the pictures, questions, simple grammatical notes, and exercises. In addition, there is a section on elementary grammar, a novel vocabulary, and a few lessons printed in the transcription of the Association Phonétique Internationale. With the exception of the rather childish preface, contributed by Prof. Rippmann, every line of the book is in German, so that oral methods of teaching the language are essential wherever the book is used. A few unusual words in modern German appear in the pages—*e.g.*, *umfallen* for *fallen* (pp. 107, 117), *gut* for *geschick* (p. 107), *Knabenshulhaus* for *Knabenshule* (p. 126), and *braucht es* for *braucht man* (p. 127); "*Wem* gleicht ein grosser Teich" (p. 107), is also not a good expression. In the vocabulary the sentence, "Er geht auf und ab vor dem Hause," should be "Er geht vor dem Hause auf und ab." There are remarkably few misprints; but on p. 127 *wen* should be *wenn*, and on p. 219 *gaben* should be *geben*. These, however, are only minor points, and do not at all modify our conviction that the book will be of much assistance in extending rational methods of instruction in modern languages. The "German Reader" is suitable for pupils in their second year, even if they have not used the "First German Book." Unlike the latter, it is printed in German type, but of a remarkably clear fount. Reproductions of Hölzel pictures, and a few other illustrations, add to the attractiveness of the Reader. Some of the questions which follow the reading lessons are not quite so explicit as they ought to be.

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[1] Stanford's Compendium of Geography and Travel." (New issue.) Europe. Vol. I. The Countries of the Mainland (excluding the North-West). By Geo. G. Chisholm, M.A., B.Sc., External Examiner in Political Geography to Victoria University. Maps and Illustrations. (London: Edward Stanford, 1899.) Pp. xx. and 736. Price 15s.

J. Verne, Le Tour du Monde. Edited by Louis A. Barbé. xix.+193 pp. (Macmillan.) 2*s* 6*d.*—This is apparently the first "Elementary" volume in Mr. Siepmann's series, and will prove a welcome addition to the readers suitable for say a fourth form. The story is too well known to adult readers to require commendation, but we may say that the editor has succeeded in shortening it without impairing the interest. The text now amounts to a hundred pages, in large type, and can be easily read in a term. The notes are brief and good, there is a full vocabulary, and also an alphabetical list of the irregular verbs, convenient for practice. There are also words, phrases and passages for retranslation. Teachers can obtain a key to these.

Classics.

Nova Anthologia Oxoniensis. Translations into Greek and Latin Verse. Edited by R. Ellis, M.A., and A. D. Godley, M.A. 279 pp. (Clarendon Press.) 6*s.* net. Also on India paper, 7*s.* 6*d.* net.—The publication of "Cambridge Compositions" recently noticed in these columns has been followed at no long interval by that of the present collection of Oxford verse copies. It may be said at once that here we have a worthy example of contemporary scholarship containing the qualities which are specially associated with the University from which it proceeds. Fifty-four Oxford men have contributed 109 Latin and 67 Greek copies in various styles and metres, each of them excellent. With this book and the Cambridge volume in our hands we need have no fear of any decadence of taste or scholarship in our Universities, and in them, moreover, our Sixth Form boys have a fresh supply of models to encourage them in the endeavour to reach a high standard of literary culture.

The following rendering by Mr. Papillon of Moore's "This World is all a Fleeting Show" is given as a specimen of lyric style:—

Mortalis specie vita brevi fugit,
quæ mendaci homines ludat imagine.
sunt falsæ lacrimæ, falsaque gaudia.
solis est superis fides
Ut sol occiduo lumine gloria
pallet: spes et amor formaque virginum
effulgent tumulo debita, nec micat
solis ni superis honor.
Quin nos sollicitis sic ferimur fretis,
quos nec vis animi per latebras viæ
illustrare valet nec nitor ingeni.
solis est superis quies.

Ovid: Metamorphoses. Book I., lines 1-150. By A. M. Allcroft, M.A., and B. J. Hayes, M.A. 46 pp. (Clive.) 1*s.* 6*d.*—The introduction contains much that is useful to the student in regard to the life and works of the poet, and in particular as to his authorities for his account of the Creation and the Four Ages of the World. The minute care with which the annotation is compiled is shown by the fact that on these 150 lines there are no less than 140 notes, besides four pages of vocabulary. These should certainly be sufficient to enable anyone to get up the text very creditably without the aid of a teacher. It should be mentioned that this portion of the book is prescribed for the Cape of Good Hope University Matriculation Examination.

Passages for Greek Translation for Lower Forms. By G. H. Peacock, M.A., and E. W. W. Bell, M.A. 142 pp. (Macmillan.) 1*s.* 6*d.*—This collection comprises short, isolated sentences, and also connected pieces from Greek writers, increasing in difficulty to the standard required for the Lower Certificate Examination. The subjects are interesting, and include several from Arrian, Lucian and the Greek Anthology.

First Exercises in Latin Prose Composition. By E. A. Wells, M.A. 72 pp. (Bell.) 1*s.*—This little book will provide as good an introduction as any to the correct writing of both simple and easy dependent sentences. It is well graduated, there are useful vocabularies, and the rules are simply stated and explained.

Cæsar. Book III. By F. H. Colson, M.A., and G. M. Gwyther, M.A. 104 + xxxiii. pp. (Bell.) 1*s.* 6*d.*—When new school editions of books of Cæsar are announced, the inevitable feeling is that there are already enough and to spare on the market. We confess to this feeling on receiving this volume in Messrs. Bell's "Illustrated Classics Series." But on examination we find features in it which completely justify its existence. The introduction, for example, is written in a fresh and unconventional style, and should succeed in stimulating the interest even of the most apathetic boy. Then comes a descriptive article on the Roman Army by A. C. Liddell, M.A. (who himself edits Books I. and II. in the same series). Here we find pictures to illustrate the soldier and his operations, such, for instance, as that here reproduced, showing the means of attacking a town under cover of the "testudo," and the efforts to repel the attack. There are in the introduction and text together twenty illustrations and three maps. The notes are useful and not excessive; they contain frequent references to very valuable appendices on subordinate sentences, the ablative absolute, the uses of the cases, and the like. The well-known difficulty about the tides in chapter xii. is treated in a full, but not wearisome, manner, and the various suggestions which have been made on the subject are collected.

Edited Books.

As You Like it. Edited by A. W. Verity, M.A. 256 pp. (The Pitt Press Shakespeare for Schools.) (Cambridge University Press.) Price 1*s.* 6*d.*—Mr. Verity's labours as an editor of Shakespeare and of Milton will only receive greater distinction from this further effort to present one of the most charming of Shakespeare's plays in a form adapted to the requirements of modern educationists. This is indeed a model edition, and schoolboys will (or ought to) delight in it. Mr. Verity has mastered one source of strength in editing. He knows how to make even profound scholarship interesting; and interesting to just that person whom it is most difficult to interest in anything except games—a modern schoolboy. This volume contains all the essentials necessary to an intelligent and thorough study of this beautiful comedy; and it can hardly fail to win success, because it is probably the most complete school edition that has ever yet been issued. Mr. Verity edits Shakespeare as literature—not as the mere material of philology.

Twelve English Poets. By Blanche Wilder Bellamy. 573 pp. (Boston, U.S.A., Ginn; London, Edward Arnold.)—This well printed and attractive-looking volume is made up of sketches of the lives and selections from the works of twelve representative English poets from Chaucer to Tennyson. Originally appearing as a series of articles in an American journal, these sketches and selections demonstrate the entire fitness of the lady who prepared them for her work. As an introduction to the study of English poetry the book is very valuable, and as it is too handsomely got up to serve exactly for school purposes, it would make a very good prize. The spirit in which Miss Bellamy has approached her work is admirably foreshadowed in her opening sentences. "English poetry is like the message torch of Gaelic story. The poets are the torch bearers. They carry to men in the signal flame of poetry the message which stirs them to life." A mind gifted with so much insight as to see that can see anything, consequently Miss Bellamy is consistently illuminative in all her criticisms. It is a pleasure to follow her, brief though her sketches are. A useful glossary is appended to the selections. Altogether a useful work.

The Works of Shakespeare. (Eversley Edition.) Vol. IX. Edited by Professor C. H. Herford. 520 pp. (Macmillan.) 5s. —This valuable edition has now been completed. The editor gives us in the present issue "King Henry V.," "King Henry VIII.," "Titus Andronicus" and "Romeo and Juliet." These plays are all most carefully dealt with, and the introduction to the two English history plays will repay very careful study. In attributing a great part of "Titus" to an unknown dramatist (who was probably Kydd), Professor Herford does not give us any fresh light upon this gruesome and ill-balanced play. He advises "a qualified acceptance" of it as in part Shakespeare's work, to which nobody who has read it at all carefully will object; but the fact remains that, however much or little Shakespeare touched up this play, the whole atmosphere is so un-Shakespearean that the play might be classed with "Locrine" and the "Two Noble Kinsmen," and other pseudo-Shakespearean dramas without any real loss to future editions of the poet's works.

Literary Criticism in the Renaissance. By J. E. Spingarn. 330 pp. (The Columbia University Press.) Price 4s. 6d.—It is that highly respectable authority, "The Preacher," who assures us that of making many books there is no end; but some books obviously *ought* to be written; and this is one of them. It is one of a series of "Studies in Literature" issued by Columbia University, containing the results of literary research or criticism by students or officers of that now celebrated institution, and is a most conspicuously able and interesting performance. Happy are the people that are in such a case, if such works as this can be produced by an alumnus who is seeking thereby the distinction of a doctorate in philosophy. It is a book for advanced students only; but they will find in it a fertile field of suggestions for further inquiry and research. When an academical study can start this, it has achieved more than its normal aim—it has become a fountain of inspiration and deserves to rank as literature.

History.

The Making of Europe. By "Nemo." 311 pp. (Nelson.) 3s. 6d.—This book is "a simple account of the origin and formation of the principal countries and states of Modern Europe," taking them one after the other, and preceded with a general "introduction." It is not a well-arranged book, events are mentioned often almost at random, and there is no index. The story of each "country or state" is told from the beginning, often the mythical beginning, but in each case the 18th century is almost entirely omitted, and we leap, as it were, from the heroics of the 17th century to the heroics of the 19th. We miss, too, the more modern historical spirit, specially in religious matters. Still, some readers might be glad to have in a small compass such a sketch of the modern world.

A Summary of Ransome's Short History of England. iv. + 155 pp. (Longmans.) 1s.—"Ransome" is, perhaps, worth summarising for special purposes. But students should do their own work in this direction. And the danger of these books is that they are sometimes used as substitutes, not as supplements.

We welcome a reprint (in Macmillan's Eversley Series) of J. R. Green's *Conquest of England* (2 vols., 10s.). Green's work is too well established for us to do more than record the new edition.

Mathematics.

The Elements of Euclid. Books I.-VI. By R. Lachlan, Sc.D. New and revised edition. x.+490 pp. (Edward Arnold.) 4s. 6d.—A sound edition of the text, with a selection of additional propositions, forming a useful introduction to modern developments, such as projective geometry, the "geometry of the triangle," inversion, &c. The unsolved exercises give illustrations of almost every degree of difficulty. The lettering of some of the figures might be improved; and the plan of emphasising the data by thick lines has, we think, been carried to an excess. Some of the definitions are expressed with needless technicality, and might with advantage be illustrated by figures; for instance, "the straight line which bisects the intercept made by two sides of a triangle on any straight line antiparallel to the third side is called a "symmedian." In dealing with the properties of a harmonic pencil (p. 432 and elsewhere), the *complete* pencil should have been given and the different cases discussed. On p. 429 the author says: "Two straight lines are said to meet at a point at infinity when they do not meet at a finite point, that is, when they are parallel." This is the only actual slip we have noticed. On the whole, this is a very useful text-book by a thoroughly competent editor.

Science and Technology.

Chemistry for Organised Schools of Science. By S. Parrish, B.Sc. With introduction by D. Forsyth, M.A., D.Sc. xiv.+262 pp. (Macmillan.) 2s. 6d.—We have here the two years' course of chemistry which has, after much trouble, been found most suitable in the School of Science of the Leeds Higher Grade School. The book is likely to be very useful in all schools where practical work in chemistry forms part of the curriculum. First-year students commence with the phenomena of burning, the composition of air, and the part it plays in combustion. Solutions are then dealt with, and this leads naturally to the study of hydrogen, after which oxygen, water, and the formation of salts are considered. The examination of carbon and some of its compounds completes the year's work. Quantitative work takes a larger part in the second-year course, during which the compounds of nitrogen, the halogens, sulphur and some of the compounds of sodium, are studied. Enough theory is from time to time introduced to make the practical work easily intelligible; in fact, the book will be as useful in the lecture-room as in the laboratory.

Ways of Wood Folk. By William J. Long. viii.+205 pp. *Stories of Insect Life.* By Mary E. Murtfeldt and Clarence M. Weed. x.+72 pp. *Little Wanderers.* By Margaret W. Morley. iv.+107 pp. (Boston, U.S.A.: Ginn & Co. London: Edward Arnold.)—These three books are excellent. They are all attractively produced—the printing is good, and the illustrations are artistic and instructive. It is a gratifying sign of the times that both in this country and America such successful efforts are being made to familiarise young people with the beauties and wonders of natural objects. But it would seem that we have much to learn in this direction, as in so many others, from American educators. Mr. Long's book will prove nothing short of fascinating to those boys and girls who are fortunate enough to get hold of it. After reading his twenty-six short pages on "Fox-Ways," to take only one example, one's ideas concerning Reynard undergo a complete change. Even if we continue to regard him as sly and not above-board in all his actions, a profound respect for his marvellous resourcefulness and quiet gentlemanly way of carrying out his somewhat shady designs is sure to result from an acquaintance with his biography as written by Mr. Long. Speaking personally, the consequence of our introduction by this author to the crows and the hornet (despite its love for strong drink) is that we have developed a human interest in both of them—Mr. Long makes them appear so much like ordinary mortals. Though the authors of the "Stories of Insect Life" and "Little Wanderers" do not possess the same literary powers as Mr. Long, yet they all three have that experience of children which enables them to explain in an interestingly familiar manner the life history of certain common American insects and plants, and in the last named of the three books, to treat of the distribution of seeds in such a manner that a child is bound to develop the habit of tracing the reason for every device in the plant forms he comes across.

Practical Plane and Solid Geometry for Advanced Students. By J. Harrison and G. A. Baxandall. xii. + 557 pp. (Macmillan.) 4s. 6d.—This is an excellent book, and ought to receive a very hearty welcome from teachers of the subject. It is well planned, and the figures are neatly executed and very plainly lettered. There is an abundance of good and practical exercises at the ends of the chapters. One constantly feels, when reading the book, that the authors not only handle the subjects under consideration with ease and confidence, but also that they manifest great originality in almost every chapter. The chapter on special curves is by far the best we have seen in any text-book, and the same may be said with regard to the plotting on squared paper. Teachers of practical mathematics and mechanics ought to read these two chapters, and also the one on graphics. It is emphatically a book from which students can themselves work. This is a very great merit, since in most evening classes a meeting is held only once in each week, which renders it impossible for a teacher to handle every part of the subject on the blackboard.

General Elementary Science. By J. T. Dunn, D.Sc. and Victor A. Mundella, M.A., B.Sc. viii. + 325 pp. (Methuen.) 3s. 6d.—We have here another example of the far-reaching effect of the introduction of a new syllabus for a well-known examination. The alteration in the regulations for matriculation at the London University, making it necessary for every candidate to satisfy the examiners in the elementary principles of physics and chemistry, has resulted in the appearance of several books dealing with these subjects. The volume before us is the most recent of them. This book differs from those which have hitherto appeared in possessing no numerical exercises, and no questions. Though the University Calendar lays great stress upon experimental work, we find no specific instructions to the pupil for the performance of experiments to illustrate the numerous subjects dealt with. At the same time, everything in the way of information necessary to pass the examination is given, and the text is accompanied by 114 diagrams, a few of which are not, however, as instructive as could be wished. The book is clearly printed, but it is a pity that certain omissions in the way of typing may give the impression to the young beginner that its contents are "dry." It only remains to be said that more than half of the volume is given to the chemical section of the syllabus.

Miscellaneous.

Elementary Brushwork Studies. By Elizabeth Corbet Yeats. (Philip.) 5s. net.—This book contains an introduction, followed by twenty-four coloured plates with instructions. The book is well printed, and the plates excellently re-produced. As a whole this work is very good, and can be heartily recommended to all who are anxious to make drawing more attractive, and at the same time thorough. It carries out the aim of the author to make brushwork interesting and educational. The fault in most books of this class is that of attractiveness at the cost of character, and many plates are devoted to meaningless blots of colour upon the same monotonous planning. In "Elementary Brushwork Studies" this error has almost entirely been avoided. Amongst many sound pieces of advice given in the introduction are the following: the children's work should be done from Nature, and that bright-coloured flowers and plants should be chosen at first. Another useful suggestion is that of painting large flowers and plants on a larger scale than the rest. Several plates of white or pale flowers are reproduced upon grey paper, thus obviating a waste of time with beginners. In the first plate there is a weak point, that of making the brush marks for the side views of the petals nearly the same width as those in the front. Amongst other slight faults are the leaves on plates IX. and XI., which have not the general characteristics of the natural forms. In the first case, the scale of the leaves is also wrong. Most of the plates are admirable, and both the examples chosen and the methods used in the later plates are excellent.

Introduction to the Commercial Sciences. By E. E. Whitfield, M.A. xvi. + 304 pp. (Rivingtons.) 3s. 6d.—This book is crammed from cover to cover with useful information, varying in character from detailed instruction in the proper method of affixing postage stamps to an account of the general principles of jurisprudence as applied to commerce. Mr. Whitfield is no professional lawyer; if he were, he would not refer to "Orders in Council" as "Orders of Council" (pp. 67 and 73), nor to the "Local Taxation (Customs and Excise) Act, 1890," as the "Local Taxation (Excise and Customs) Act of 1890" (p. 166). Still he possesses a working acquaintance with mercantile and industrial law, and devotes a large portion of his book to a simple exposition thereof. This, with some well-written chapters on the general principles of economics and economic history, constitutes the first, or theoretical part of the book. The second part, however, pleases us more, as it convinces us of the practical knowledge of the author and of his fitness to write a book on the subject. After dealing with the leading commodities and industries of the United Kingdom, and giving an interesting account of the chief markets in the world, the details of everyday commercial life are discussed and the procedure necessary in each set of circumstances is fully explained. The three chapters on the history, theory and practice of banking are particularly well done. The value of the book is enhanced by references to standard authorities, by various examination papers, and by footnotes giving the French and German equivalent of every important commercial term. The author's style is not at all times clear. For instance, on p. 72 he says, "Standard gold contains one-twelfth alloy, the rest being generally copper!" But the book is one of importance, and deserves extensive use.

Who's Who. 1900. An Annual Biographical Dictionary. xviii. + 1,002 pp. (A. & C. Black.) 3s. 6d. net. *The Englishwoman's Year-Book and Directory.* Edited by Emily James. xxi. + 340 pp. (A. & C. Black.) 3s. 6d. net.—There are a few indispensable annuals, and *Who's Who* is one of them. Short biographies of practically every person of distinction are given in it, and also of many who have not attained distinguished eminence, but whose names are sufficiently before the public to give general interest to the biographical notes. Preceding the biographies is a collection of useful information, some of which is not accessible in other books of reference. In this section we find lists of members of the London School Board, peculiarly pronounced proper names, pseudonyms and pen-names, public schools and their headmasters, ladies' colleges, universities and their officers and heads of houses, chairs and professors in the universities, and degrees conferred by the universities. The publishers evidently take great pains to make the volume a comprehensive gallery of prominent persons, which should be given a place in every library and common room.—The large and important part now taken by women in national progress may be seen in *The Englishwoman's Year-Book*. The first section contains descriptions of institutions and organisations concerned with the education of women, and other matters affecting their educational progress. There are in addition thirteen other sections showing what women can do and have done in various branches of intellectual activity, such as medicine, science, art, literature, music, &c. The volume is well arranged, and constitutes an inspiring guide for women of all classes and interests.

Book-keeping for Elementary Schools. In Three Stages. By J. Thornton. Stage I. (Macmillan.) 9*d.*—This book has been written to meet the requirements of the graduated course approved by the Education Department. It is divided into thirty short lessons, and the method of treatment is at once full, interesting, and well-adapted to the abilities of even the youngest children in elementary schools.

The "Alphabet" Drill with Musical Accompaniments. By A. Alexander. 7 pp. (Philip.) 1*s.* net.—This small pamphlet gives full instructions for a series of pretty exercises in educational drill. Not only is it concerned with the formation of separate letters, but also with word-building.

LONDON MATRICULATION, JUNE, 1900.

Monthly Test Papers.—No. 2.

THE second of a series of five test papers covering the syllabuses of all the compulsory subjects of the London University Matriculation Examination, together with test papers in French, is published this month. Copies of any of the papers can be obtained in a form suitable for distribution in class. The reprinted papers are sold in packets of twenty-five at a cost of 6d. net for each subject. The papers may be ordered through a bookseller, or they may be obtained (post free) from the editors of THE SCHOOL WORLD, but in the latter case all orders *must be prepaid.* Judging by the demand for similar papers last year, teachers would be well advised in making early application, as a limited number only is printed.

Latin Grammar and Composition.

(1) Give the ablative singular, genitive plural and gender of—quies, dies, palus, frigus, tubicen, pulvis, ōs, ars, domus, iter.

(2) Give the comparative and superlative adjectives from—frugi, prope, juvenis, pius, nequam: and form adjectives from—hodie, fama, diu, cras, terror.

(3) Give the meaning of—quisque, quisquis, quivis, quisnam, quidam: and give the Latin for—how many, so many, how long, of what sort, such.

(4) Give the Latin cardinal numerals from 11 up to 20: the meanings of—alter, alius, uter, uterque: and translate into Latin—one-half, three-quarters, June 20.

(5) Construct short sentences showing the different uses of *ut*, and distinguish between:

(*a*) cum Cæsar advenit iter festinatum est;—and

(*b*) cum Cæsar adveniret, iter festinatum est.

(6) Classify the chief uses of the Dative Case, and give examples.

(7) Translate into Latin:

(*a*) Cæsar inquired how many days the journey would necessarily cost him.

(*b*) Take me as your friend that I may help you.

(*c*) The place was very suitable for watching the battle.

(*d*) If the soldiers had obeyed Cæsar they would not have suffered defeat.

(8) Translate into Latin, putting it into the Oratio Obliqua:

"If the Roman people will make peace with the Helvetii, the Helvetii will go and settle where you bid and wish them to be. But if you continue to harry us with war, remember the past disaster of the Roman nation.

(9) Give the principal parts of—suadeo, gaudeo, coquo, gero, repo, vivo, uro, spargo, cresco, seco.

Latin—Cæsar.

DE BELLO GALLICO, IV. Ch. 28—38.

(1) Translate:

(*a*) Ch. XXX. Quibus rebus . . . deducere cœperunt.

(*b*) Ch. XXXII. Cæsar, id quod erat . . . circumdederant.

(*c*) Ch. XXXVII. Quibus ex navibus . . . misit.

(2) Translate, with notes on the construction of the words in italics:

(*a*) post *diem quartum* quam est in Britanniam *ventum* naves XVIII leni *vento* solverunt.

(*b*) Itaque, cum summo *studio* a militibus administraretur, XII navibus amissis, *reliquis* ut navigari commode posset, effecit.

(*c*) Morini, spe prædæ adducti, primo non ita magno suorum *numero* circumsteterunt ac, si sese interfici *nollent*, arma ponere iusserunt . . . Qua re nuntiata Cæsar omnem ex castris equitatum *suis auxilio* misit.

(3) Give the meanings of the following words as used in these chapters—aridum, turma, temo, alienus, siccitates.

(4) Parse—occisus, delatæ, sublati, coorta est, necessario.

(5) Translate:

In pedite robur; quædam nationes et curru prœliantur; honestior auriga, clientes propugnant, olim regibus parebant, nunc per principes factionibus et studiis distrahuntur; rarus duabus tribusve civitatibus ad propulsandum commune periculum conventus; ita singuli pugnant, universi vincuntur. Cælum crebris imbribus ac nebulis fœdum; asperitas frigorum abest; nox clara et extrema Britanniæ parte brevis, ut finem atque initium lucis exiguo discrimine internoscas.

English Language.

ORTHOGRAPHY AND ACCIDENCE.

(*Literature*, 1300-1550.)

(1) "The form of the word *advance* records a ludicrous error in etymology." (Skeat.) Explain this assertion.

(2) What are the vowel sounds used in English? How is each represented phonetically? Give examples.

(3) Write notes on the spelling of:—*Lammas, wasp, tender, apricot, quagmire, rhyme, tile, could, dropsy, newt.*

(4) What is the origin of the suffixes in:—*spinster, children, other, whom, loved, living, needs, headlong, lady's, mine.*

(5) What is the etymology of each of the forms of the Demonstrative Pronoun of the third person?

(6) Name any verbal forms which were once preterites, but are now presents only. What Weak verbs have become Strong? What Strong verbs have become Weak?

(7) Discuss the comparison of the following adjectives:—*good, nigh, little, late, many.*

(8) Analyse :—

O what a deal of scorn looks beautiful
In the contempt and anger of his lip :
A murderous guilt shows not itself more soon
Than love that would seem hid : love's night is noon.

(9) Write a short account of (*a*) "The Canterbury Tales," (*b*) "Utopia," or (*c*) "Piers the Plowman."

(10) How would you choose a suitable subject for an Essay, and what are the characteristics of a good Essay? Or, write an Essay on "Conscription."

English History.

(1154-1485.)

Not more than **eight** *questions to be attempted, of which one must be Q.* **12.**

(1) *Either* (*a*) Justify the statement that Henry II.'s reign "initiated the rule of law," *or* (*b*) Give a summary account of the legislation of the reign of Edward I.

(2) What were the chief points at issue *either* (i.) between Henry II. and Archbishop Thomas, *or* (ii.) between John and the Pope? How was the quarrel finally settled in each case?

(3) How was the Norman Conquest of Ireland finally brought about? What was the state of Ireland under Edward III.?

(4) Explain briefly the circumstances which led up to the issue of (i.) *Magna Carta*, (ii.) *Confirmatio Cartarum*. State and explain the principal clauses in each document.

(5) Give a clear view of the causes which led to the Civil War under Henry III., with special reference to the policy and character of Earl Simon. Account for the failure of Simon de Montfort as a reformer.

(6) On what pleas did Edward I. undertake the conquest of Scotland? Trace the course of the national resistance up to Bannockburn.

(7) Explain the words in italics :—

Mark the year and mark the night
When *Severn shall re-echo with affright*
The shrieks of death through Berkley's roof that ring,
Shrieks of an agonising king!
She-wolf of France, with unrelenting fangs,
That tears the bowels of thy mangled mate,
From thee be born, who o'er thy country hangs,
The scourge of Heaven.

(8) Describe the social state of England *either* (i.) during the second half of Edward III.'s reign, *or* (ii.) during the Wars of the Roses.

(9) Explain the causes, course and consequences of the Peasants' Rising in 1381.

(10) Write brief character sketches of Edward I. and Henry IV., and give an account of Richard I. as a Crusader.

(11) Answer **any one** of the following questions on Anglo-French relations :—

- (i.) What led to Edward III.'s war with France?
- (ii.) Explain Edward III.'s claim to the throne of France. Under what circumstances, and with what results, was the claim subsequently revived?
- (iii.) Trace the steps by which Henry V.'s conquests in France were lost after his death, and show how home events contributed to that issue.
- (iv.) In what way was the course of the invasion of France in the fifteenth century influenced by the relations between England and Burgundy?
- (v.) How did the loss of the French possessions of the English crown in the fifteenth century affect England?

(12) Draw a sketch map of the south of Scotland, marking the sites of the principal battles and sieges of the wars of independence in the reigns of Edward I. and Edward II.

Arithmetic and Algebra.

(Including Profit and Loss, Square Root, Cube Root, Areas and Volumes in Arithmetic; and Highest Common Factor and Least Common Multiple in Algebra.)

(1) Find the greatest number which will exactly divide both 760,763 and 2,261,261; and the least sum of money which will contain 3s. 6d., 3s. 3¾d. and 2s. 2¼d. an exact number of times.

(2) Of the total revenue of the kingdom for the year 1898-99, 94·9 per cent. was derived from taxation, 3·8 per cent. from the Post Office, ·45 per cent from Crown Lands, and the remainder, £817,462, from interest on Suez Canal shares and from miscellaneous sources; what was the actual income derived from taxation?

(3) A rectangular box, with no lid, is made of oak one inch thick, the outside dimensions being 2ft. 6in. wide, 3ft. 6in. long, and 1ft. 9in. high; if the box be filled with earth, find, to the nearest lb., the weight of the box and the earth, supposing 21 cubic feet of earth to weigh one ton, and one cubic foot of oak 54 lbs.

(4) If $2x+3y=p$ and $2x-3y=q$, find the value of x^2-y^2.

(5) Divide $x^2(y-z)+y^2(3z-x)+3z^2(x-y)-2xyz$ by $x-y$, and find the factors of the quotient.

(6) Solve the equations :—

$$\text{(i.)}\quad \frac{3}{x+3}+\frac{4}{x+4}=\frac{7}{x+7};$$

$$\text{(ii.)}\quad \begin{aligned} x+y&=8\\ (m+n)x-(m-n)y&=8m. \end{aligned}$$

(7) A bookseller buys 24 copies of one book and 16 of another for £7 9s. 4d.; by selling the first book at the rate of half as much again for each copy and the second at a profit of 45%, he gains altogether £3 12s. on the transaction; what was the selling price of each book?

(8) Find the highest common factor of $x^4-3x^3+11x^2-27x+18$ and $x^4-x^3+12x^2-9x+27$.

(9) Show that the product of two expressions is equal to the product of their highest common factor and their lowest common multiple.

Find the L.C.M. of $x^4+ax^3-a^3x-a^4$, $x^4+2ax^3-a^3x-2a^4$ and $x^3+2ax^2-a^2x-2a^3$.

Answers.

(1.) 751; £46 7s. 6d. (2) £91,267,228. (3) 13 cwt. 54 lbs.

(4) $\frac{5p^2+26pq+5q^2}{144}$. (5) $(x-3z)(y-z)$. (6) (i.) $-3\frac{1}{2}$;

(ii.) $x=\frac{8m-4n}{m}$, $y=\frac{4n}{m}$. (7) 6s. and 4s. 10d.

(8) x^2+9. (9) $(x+a)(x+2a)(x^3$

Geometry.

(*Books I. and II.*)

(1) From a given point outside a given straight line draw a perpendicular to the given straight line.

A and B are two given points on the same side of the given straight line CD; find a point P in CD such that the sum of AP and PB may be the least possible.

(2) If two triangles have two sides of the one equal to two sides of the other each to each but the angle contained by the two sides of the one greater than the angle contained by the two sides of the other, then shall the base of that which has the greater angle be greater than the base of that which has the less.

Two straight lines, AB, CD, bisect one another; under what conditions is the figure ACBD a rhombus?

(3) If a straight line fall across two parallel straight lines it shall make the alternate angles equal and the two interior angles on the same side of the line together equal to two right angles.

ABC is any triangle; draw a straight line DE parallel to BC and cutting the sides AB, AC, in D and E, so that DE may be equal to (i.) the sum of BD and CE, (ii.) the difference between BD and CE.

(4) Describe a parallelogram equal to a given triangle and having an angle equal to a given angle.

(5) ABCD is a quadrilateral in which the angles ABC, ADC are right angles; show that BD cannot be greater than AC, and that when BD is equal to AC the quadrilateral becomes a parallelogram.

(6) If a straight line be bisected and produced to any point the rectangle contained by the whole line thus produced, and the part produced, together with the square on half the line bisected, is equal to the square on the straight line made up of the half and the part produced.

Express this proposition in an algebraical form.

(7) In every triangle the square on the side subtending an acute angle is less than the squares on the sides containing that angle.

In any triangle the sum of the squares on the sides is equal to twice the sum of the squares on half the base and the median.

(8) Construct a square equal to a given rectangle.

(9) ABC is a right-angled triangle with the right angle at A; if AD be drawn perpendicular to BC, show that the square on AD is equal to the rectangle contained by BD and DC and that the square on AB is equal to the rectangle contained by BC and BD.

General Elementary Science.

PHYSICAL QUESTIONS.

(1) "Equal forces acting on a given mass produce equal momenta in equal times." Describe experiments to illustrate this.

(2) Four forces act at a point. The first of 10 units acts due north, the second of 15 units due east, the third of 20 units due south, and the fourth of 25 units due west. Find (*a*) graphically, and (*b*) by calculation, the magnitude and direction of the resultant.

(3) A piece of sheet zinc, 12 inches long by 9 inches wide, is divided into nine rectangles of equal area by means of a ruler and pencil. One of the five rectangles that are not corner rectangles is cut away. How would you find the centre of gravity of the remaining piece of zinc?

(4) Describe an experiment to demonstrate that the resultant of two parallel forces is equal to the algebraical sum of the forces.

(5) Define "inertia." What experiments have you seen designed to show that matter possesses inertia?

CHEMICAL QUESTIONS.

(1) Describe what happens when charcoal, sulphur, and phosphorus are separately heated in air. What substances are produced in each case?

(2) Starting with brimstone, explain how sulphuric acid can be prepared. Give three experiments to show the chief properties of this acid.

(3) What important facts can be learnt by passing hydrogen over heated black oxide of copper.

French.

I. Translate the following passage:—

Le nombre de lecteurs russes s'augmente chaque jour, et ils demeurent aujourd'hui pas moins attentifs qu'hier à toutes les manifestations des belles lettres; témoin la quantité énorme d'éditions, dans ces dernières années, des œuvres complètes des auteurs d'hier, déja devenus classiques . . . . . Les deux éléments,—auteurs et public,—nécessaires au développement d'une littérature, existent toujours en Russie, et cependant aucune œuvre des nouveaux-venus n'a fait événement depuis nombre d'années, cet événement à la fois littéraire et social que produisaient si souvent les créations de leurs devanciers. L'unique exemple de Nadson fait seulement ressortir, par son exception, l'uniformité de la règle.

II. Translate into French:—

In the western part of England lived a gentleman of great fortune, whose name was Merton. He had a large estate in the Island of Jamaica, where he had passed the greater part of his life, and was master of many servants, who cultivated sugar and other valuable things for his advantage. He had only one son, of whom he was excessively fond; and to educate this child was his reason for determining to stay some years in England.

III.

(1) Give the meanings and the plural forms of the following—*anneau*, *grand'tante*, *grand-père*, *essuie-mains*, *carnaval*, *sac de nuit*.

(2) Decline *qui* (relative and interrogative) and *lequel*. What parts of speech may *leur* be? Translate—The students have lost their books; I offered them mine, but they preferred their own.

(3) Write the first person singular of all the primitive tenses of *aller*.

(4) Give the French for—80, 281, her needle, His Majesty the King, February 1st, 1900.

(5) Conjugate in the singular the present indicative and future of *vaincre*, *mouvoir* and *suivre*, and in the plural the present subjunctive and present perfect of *s'apercevoir* and *se lever*.

JUNIOR OXFORD LOCAL EXAMINATION, JULY, 1900.

Monthly Test Papers, No. 2.

SIX test papers in the ten most popular subjects for the Junior Oxford Local Examination in July, 1900, have been specially prepared for us by teachers with a large experience of the requirements of the examinations. The second of the series is given below. Copies of the papers in any of the subjects can be obtained in a form suitable for distribution in class. The reprinted papers are sold in packets of twenty-five, at a cost of 6d. net. The papers may be ordered through a bookseller, or they may be obtained (post free) from the editors of THE SCHOOL WORLD, but in the latter case all orders *must be prepaid*.

Arithmetic.

(Including Proportion, Percentages, Profit and Loss, Simple Interest and Square Root.)

(1) Simplify:—

$$\frac{4\frac{2}{4}+3\frac{7}{15}}{9\frac{24}{55}\div3\frac{3}{5}}\quad\text{(ii.)}\quad 3-$$

(2) Multiply 3·72 by ·0011 and divide the product by 5·231 to six places of decimals; find also the value of ·003125 of £11.

(3) How many square inches are there in 2 ac. 3 ro. 13 per. 10 sq. yds. 2 sq. ft.? and what decimal of a mile is 4 po. 2 yds. 2 ft. 3 in.?

(4) Find the value of 20 tons 5 cwt. 2 qrs. 13 lbs. of zinc at £25 13s. 4d. a ton.

(5) Find the Simple Interest on £131 5s. 8d. for 3 yrs. 4 mos. at $3\frac{3}{4}$ per cent. per annum.

(6) Extract the Square Root of 13·98909604 and of $564\frac{220}{289}$.

(7) What is meant by "rate per cent."? How much is $14\frac{2}{3}$ per cent. of £15 9s. $4\frac{1}{2}$d. and of 1 mi. 2 fur. 22 po. 4 yds.?

(8) A man's liabilities amount to £6,472 and his assets to £3,910 3s. 4d; how much can he pay in the £?

(9) Find the value of $(\cdot\dot{1}5384\dot{6}\times 9\cdot\dot{2}8571\dot{4}$ of $\cdot2\dot{3})$ of £4 10s.

(10) How long will it take 3 men and 2 boys to count 65,000 sovereigns, having given that two men can count as fast as 3 boys and 5 boys can count 100 in a minute?

Answers.

(1) (i.) $2\frac{14}{15}$; (ii.) $1\frac{7}{15}$. (2) ·004092; ·000782; $8\frac{1}{4}$d.
(3) 17772660; ·0140625. (4) £520 10s. $9\frac{3}{4}$d.
(5) £16 8s. $2\frac{1}{2}$d. (6) 3·7402; $23\frac{13}{17}$. (7) £2 5s. $4\frac{1}{2}$d.;
1 fur. 22 po. (8) 12s. 1d. (9) £1 10s. (10.) 8 hrs. 20 min.

Old Testament—Genesis.

(1) Relate the circumstances attending the promise of Isaac.

(2) In what ways were Abraham's relations with the King of Egypt and with Abimelech similar and dissimilar? Can you explain his conduct?

(3) Give the significations of Sarai, Sara, Abram, Abraham, Eliezer, Nahor, Laban. Where were Hebron, Zoar, Gerar, Mount Moriah and Mesopotamia?

(4) Who were the "Sons of Heth"? How did Abraham display his character in dealing with them?

(5) Relate briefly the story of the marriage of Rebekah and Isaac.

(6) Give the words of the Second Covenant.

(7) Explain, and give the context:

(*a*) "became an archer."
(*b*) "Seven ewe lambs of the flock."
(*c*) "the fountain in the way to Shur."
(*d*) "in the presence of the sons of my people."
(*e*) "a wife out of the land of Egypt."

New Testament—St. Luke.

(1) "He charged him to tell no man." What reasons can you give for this silence commanded by Jesus? Can you recall any other cases?

(2) What inference are we to draw from Our Lord's contrast between Himself and John the Baptist?

(3) Say what you know of the two apostles named James and the two named Judas.

(4) "In like manner did their fathers unto the prophets." State the context of these words, and give as many illustrations as you can recall.

(5) What four woes are peculiar to St. Luke? With what four beatitudes are they to be contrasted?

(6) What do you understand by Our Lord's "brethren"? What did he teach about this relationship?

(7) Give some account of the Pharisees and their teaching; or, relate the story of the demoniac. What was "the country of the Gadarenes"?

English Grammar.

NOUNS, ADJECTIVES, PRONOUNS.

(1) What are Abstract Nouns? How are they formed?

(2) What is meant by the degree of an Adjective? Compare—much, near, splendid, gay, terrible, lovely.

(3) What are the functions of Conjunctive Pronouns? Comment on the sentences—(*a*) John, who, we see, is here, will tell us. (*b*) John, whom we see here, will tell us.

(4) Write down the plurals of—memorandum, wharf, galley-slave, dilettante; the feminine of—stag, author, doctor, signor; the Possessive case (plural) of—ness, fox, man.

(5) Should the words, a, an, the, be classed as Adjectives?

(6) Write, in your own words, the meaning of—

I sat me down to watch upon a bank
With ivy canopied, and interwove
With flaunting honey-suckle, and began,
Wrapt in a pleasing fit of melancholy,
To meditate my rural minstrelsy.

(7) Subjects for essays:—

(*a*) Should Fagging be abolished.

(*b*) Description of an imaginary School Concert.

English History.

(1154—1216.)

(*Not more than* **five** *questions to be attempted.*)

(1) Make out a list of the different territories over which Henry II. had direct or indirect control. Opposite the name of each territory state—**either** (*a*) how Henry II. came to control that particular territory; **or** (*b*) whether or not it was in John's possession just before his death.

(2) Tell the story of **one** of the following:—

(*a*) Henry II.'s relations with Thomas of Canterbury.

(*b*) The Norman Conquest of Ireland.

(*c*) John's relations with Stephen Langton.

(*d*) Richard I.'s Crusade.

(3) Explain briefly the terms *Excommunication*, *Hidage*, *Interdict*, *Knight*, *Scutage*.

(4) What is a "charter"? Mention some of the things which were promised in charters of this period. Give reasons for describing the best known charter of the time as "the *Great* Charter."

(5) Write a character-sketch of **either** Henry II. **or** one of his sons.

(6) Where were the following places and with what historical events are they associated during this period?—*Acre*, *Austria*, *Bouvines*, *Canterbury*, *Cashel*, *Clarendon*, *Falaise*, *Northampton*, *Runnymede*, *Toulouse*.

As You Like It.

(1) Contrast the characters of Celia and Rosalind. What inconsistencies do you notice in the different descriptions given of them?

(2) From what source did Shakespeare draw his plot? How does he diverge from his original?

(3) Write a short note on the fool or clown of the Elizabethan theatre.

(4) Explain the following expressions, referring to the context in every case:—

There they live like the old Robin Hood of England.
As the most capricious poet, honest Ovid, among the Goths.
Like Diana in the fountain.
Cæsar's thrasonical brag.
The fair, the chaste and unexpressive she.
'Tis a Greek invocation to call fools into a circle.

(5) Give the meaning and derivation of—pantaloon, curtle-axe, carlot, bastinado, duc dame, sequestered, cope, ballet, quintessence.

Geography.

NATURAL PRODUCTS; POLITICAL GEOGRAPHY OF EUROPE AND SOUTH AMERICA.

(1) What are teak, indigo, cloves, palm-oil, and from what parts of the world do they come?

(2) Which are the chief wool-growing districts of the earth? What are the chief exports of India?

(3) Name the chief places in the British Isles engaged in the following industries:—glass, ship-building, cotton, fruit-farming.

(4) What is the chief town of each of the following territories, and of what country is it a part?—French Guiana, Moravia, Servia, Araucania, Queen's County, Savoy. Which are the most thickly-populated parts of South America?

(5) How many states are there in the German Empire? Name as many as you can and give their capitals.

(6) Draw a sketch-map of Brazil; show where the Equator crosses it, and name the surrounding countries.

French.

(1) Translate into French:

(*a*) He has only eighty postage-stamps. I have two hundred and eighty-six.

(*b*) My youngest daughter's fine dog has won several prizes.

(*c*) She has had a new hat made.

(*d*) His father is a policeman. He has a black beard and wears a dark blue uniform.

(*e*) That's my house. What do you think of it?

(*f*) When he comes, please ask him to wait a few minutes.

(2) Translate into English:

Ceci me rappelle l'anecdote de la duchesse obligée de se rendre au couvent voisin par un jour d'hiver. Le couvent était pauvre, le bois manquait, et les moines n'avaient, pour combattre le froid, que la discipline et l'ardeur des prières. La duchesse, qui grelottait, revint touchée d'une profonde compassion pour les pauvres religieux. Pendant qu'on la débarasse de sa pelisse et qu'on ajoute deux bûches au feu de sa cheminée, elle mande son intendant, auquel elle ordonne d'envoyer, sur-le-champ, du bois au couvent. Elle fait ensuite rouler sa chaise longue près du foyer, dont la chaleur ne tarde pas à la ranimer. Déjà le souvenir de ce qu'elle vient de souffrir s'est éteint dans le bien-etre; l'intendant rentre, et demande combien de chariots de bois il doit faire transporter. "Mon Dieu! vous pouvez attendre," dit nonchalamment la grande dame; "le temps s'est beaucoup radouci."

(3) Give the plural of—*bail*, *anneau*, *œil*, *feu* (fire), *fou*, and the masculine of—*cette vieille dame*, *molle*, *fraîche* and *celle-ci*.

(4) Explain the method of indicating different degrees of comparison in French. Put into French—The eldest son; the least of these little ones; the finest horse.

(5) Conjugate interrogatively the preterite of *monter*, *venir*, *rendre*. Give the imperative of *aller* and *chanter*.

(6) What is the rule for the formation of adverbs of manner from adjectives? Give four examples.

(7) For those only who offer "Colomba" (pp. 26-51).

(i.) Translate into English:

(*a*) p. 31, ll. 15-26. Colomba je[illegible] . . . . soit court.

(*b*) p. 41, ll. 14-25. Lorsque le brigadier . . . . en entrant.

(*c*) p. 49, ll. 6-17. Ma sœur . . . . moquiez de nous.

(ii.) Write short notes on—*les yeux bleu foncé*, *voceratrice*, *sur ces entrefaites*, *bouder*.

(8) For those only who offer "L'homme à l'oreille cassée" (pp. 35-67).

(i.) Translate into English:

(*a*) p. 37, ll. 9-19. Mais ce qui . . . . dans son cœur.

(*b*) p. 48, ll. 26-34. Après une semaine . . . . de leurs tissus.

(*c*) p. 61, ll. 15-24. Les officiers . . . . jours de solde.

(ii.) Write short notes on - *Haridelle, d'échouer au port, chaux vive, tout cela ne va qu'à moitié bien.*

Algebra.

(Including Highest Common Factor, Lowest Common Multiple and Fractions.)

(1) Simplify:—

$$(3x-y)+z-[4x-\{3z+2(y-x)\}]-\{x-y-z+2y\}.$$

(2) (Multiply $x^3-4x^2y+xy^2-3y^3$ by $x^2+4xy-5y^2$.

(3) A merchant buys *a* articles for *p* pence a dozen and sells them for *s* shillings a score; how much does he gain?

(4) Find the G.C.M. of

$$x^4-6x^3+3x^2+12x-10 \text{ and } x^4+6x^3+3x^2-12x-10.$$

(5) Split into factors each of the following expressions:—

$$2(x^2-a^2),\ 6(x^3-a^3),\ 4(x^4-a^4);$$

and thence write down their lowest common multiple.

(6) Solve the equations:—

(i.) $4x+3(3x+1)(x-3)=11+(3x+2)^2$;

(ii.) $2x-y=\frac{a-b}{2}$, $ax-by=\frac{1}{2}(a-b)^2$.

(7) In a certain division sum the dividend is 25 times the remainder; if the divisor be 24 and the sum of the dividend, the quotient and the remainder be 972, find the dividend and the quotient.

(8) Find the square root of

$$x^4-2c^2x^2(a-2)+4cx(x^2-ac^2)+a^2c^4.$$

(9) Simplify:—

(i.) $\frac{3}{x^2-7xy+10y^2}-\frac{2}{x^2-6xy+8y^2}$;

(ii.) $\frac{a^2-ax}{a^2+ax-2x^2}\times\frac{a^2}{1-x^2}\div\frac{a-x}{a^2-2ax}$.

(10) If the numerator and denominator of a certain fraction be each increased by one, the fraction becomes $\frac{1}{2}$, but if they be each decreased by one the fraction becomes $\frac{1}{3}$; find the fraction.

Answers.

(1) $-2x+z$. (2) $x^5-20x^3y^2+21x^2y^3-17xy^4+15y^5$.

(3) $\frac{36s-5p}{60}a$ pence. (4) x^2-2. (5) $12(x+a)(x^2+a^2)(x^3-a^3)$. (6) (i.) $-\frac{3}{4}$; (ii.) $x-y=\frac{a-b}{2}$.

(7) dividend, 900; quotient, 36. (8) $x^2+2cx-ac^2$.

(9) (i) $\frac{1}{x^2-9xy+20y^2}$; (ii.) $\frac{1}{1+x}$. (10) $\frac{3}{7}$.

Euclid.

(Book I.)

(1) Define a semi-circle, a polygon and a parallelogram.

(2) Divide a given finite straight line into two equal parts.

(3) Any two sides of a triangle are together greater than the third side.

(4) Parallelograms on the same base and between the same parallels are equal in area.

(5) Describe a square on a given straight line.

(6) If two triangles have two sides of the one equal to two sides of the other, each to each, and have also their bases or third sides equal, then shall the angle contained by the two sides of the one be equal to the angle contained by the two sides of the other.

(7) If one side of a triangle be produced the exterior angle so formed shall be equal to the sum of the interior and opposite angles and the three angles of the triangle shall be together equal to two right angles.

(8) The straight line cutting off equal segments from the sides of an isosceles triangle is parallel to the base.

(9) ABCD is a square and a point E is taken in the side CD so that DE is less than CE; show that AE is less than BE.

(10) ABC is a right-angled isosceles triangle with the right angle at B; from P, any point in AC, PD, is drawn perpendicular to AC to meet AB in D; show that the sum of the squares on AP, PC, is equal to the sum of the squares on BD, BC.

PRELIMINARY OXFORD LOCAL EXAMINATION, JULY, 1900.

Monthly Test Papers.—No. 2.

The increasing importance of the Preliminary Local Examinations of both Oxford and Cambridge has made it necessary to take into account the work of the teachers engaged in preparing pupils for these examinations. We have, consequently, had six test papers in each of the seven most important subjects drawn up by experienced teachers, and the second is printed this month. Copies of the questions in any subject dealt with can be obtained in a form suitable for distribution in class. Particulars will be found on page 74, in connection with the Junior Local Examination.

Arithmetic.

(1) Divide 10136368225 by 10135; give your answer in words.

(2) Multiply £132 4s. 7¼d. by 135.

(3) Reduce 61423 half-pence to £. s. d.

(4) Simplify $\frac{3}{8}-\frac{1}{9}+\frac{15}{16}-\frac{7}{24}$.

(5) Multiply the sum of $3\frac{1}{4}$ and $4\frac{1}{3}$ by the difference between $7\frac{1}{2}$ and $1\frac{1}{14}$.

(6) Divide 14 by ·0032.

(7) Find the value of 2 lbs. 7 oz. 5 dwt. of silver at £2 8s. a lb.

(8) Find the Simple Interest on £1,645 10s. for 20 years at 4 per cent. per annum.

Answers.

(1) 1,000,135. (2) £17,851 1s. 6¼d. (3) £127 19s. 3½d. (4) $\frac{7}{18}$. (5) $48\frac{3}{4}$. (6) 4,375. (7) £6 5s. (8) £1,316 8s.

New Testament—St. Luke.

(1) What special mentions of the State of Infancy are made by St. Luke?

(2) Say what you know about the calling of (*a*) the sons of Zebedee, (*b*) Matthew the publican.

(3) Arrange the names of the Twelve Apostles in the usual three groups. Why should Judas Iscariot be placed last?

(4) With what four short parables does St. Luke conclude the Sermon on the Mount? Write out one of them in your own words.

(5) Explain the Parable of the Two Debtors.

(6) What does Our Lord teach about the Sabbath?

(7) Explain

(1) 'shew bread."

(2) 'receipt of custom."

(3) 'Children of the bride chamber.'

(4) 'Magdalene."

(5) 'Much more than a prophet."

(6) 'centurion."

English History.

(1629—1646.)

Not more than **five** *questions to be attempted. Credit will be given for maps or other drawings to illustrate the answers; but not more than one-fifth of the time allotted to the paper should be devoted to such illustrations.*

(1) For what reasons, and for how long, did Charles I. attempt to govern without a Parliament? What events ultimately compelled him to summon another Parliament?

(2) Write brief accounts of **any two** of the following:—Falkland, Hampden, Laud, Pym, Strafford.

(3) Tell the story of **any one** of the following events:—

(*a*) The Bishops' Wars.

(*b*) The Irish Rising of 1641.

(*c*) The exploits of Montrose in Scotland.

(*d*) The battles of Marston Moor **or** Naseby (**not both**).

(4) State the principal things done by the Long Parliament during its first session.

(5) If you had been living in 1642 would you have been a Roundhead or a Cavalier? Give your reasons—remembering that probably you would not have foreseen the execution of the king.

(6) What is a "covenant"? Show that you know the difference between the *Scottish National Covenant* and the *Solemn League and Covenant.*

English Grammar.

VERBS.

(1) What are (*a*) Transitive, (*b*) Auxiliary, Verbs? Define Tense.

(2) Parse fully the verbs in the following :—"A large part of the surface is covered with forests, which supply the timber that forms Canada's chief natural wealth."

(3) What is meant by a verb of incomplete predication? Give instances.

(4) Give the past tense (first person singular) and the past participle of—lay, lie (down), come, swim, bid, teach, climb.

(5) Passage for paraphrasing :

The curfew tolls the knell of parting day,
  The lowing herd winds slowly o'er the lea,
The ploughman homeward plods his weary way,
  And leaves the world to darkness and to me.

Robinson Crusoe.

(1) Describe the events which made it possible for Crusoe to leave his island.

(2) What was the vision which Crusoe saw in the ague-fit?

(3) Describe the making of Crusoe's boat.

(4) Where and what are—Yarmouth Roads, Leadenhall Market, Sallee, Pics of Teneriffe, Bay de Todos los Santos, Rochelle?

(5) Explain the meaning of sheet-anchor, punch, moidores, crusadoes, zenith, periagua, to stave, leeward.

Geography.

WATER-FORMATIONS.

(1) Where are these rivers? Name their source and mouths :—Ganges, Amazon, Elbe, Volga, Congo.

(2) Define and give instances of strait, gulf, bay, creek.

(3) How are Lakes formed? What happens when a lake has no outlet?

(4) What are waterfalls and cascades? What makes the volume of the waterfall vary?

(5) Describe the formation of springs.

(6) Draw a map of the Mediterranean Sea, inserting these names :—Sicily, Cyprus, Balearic Isles, the mouths of the Rhone and the Nile, Algeria, Greece, Gulf of Lyons.

French.

(*Set-Book, pp.* 12-23.)

(1) Translate into French :—
  (*a*) Why did they not begin sooner? I do not know.
  (*b*) There are the books. Don't give them to her to-day.
  (*c*) There are some men who live a hundred years.
  (*d*) It is said that he is a miser (*avare*).
  (*e*) Really, that is very funny (*drôle*).

(2) Write the second person singular future, the third person plural preterite, and the first person singular present subjunctive of—*être, avoir, aller, rire, envoyer.*

(3) Give the feminine forms of—*nègre, acteur, fils, voyageur,* and compare—*beau, mal, petit, peu.*

(4) Translate into English :—

Il traverse plusieurs chambres pleines de gentilshommes et de dames dormant tous, les uns debout, les autres *assis.* Il entra dans une chambre toute dorée, et il *vit* sur un lit, dont les rideaux étaient *ouverts* de tous côtés, le plus beau spectacle qu'il *eût* jamais vu, une princesse qui paraissait avoir quinze ou seize ans, et *dont* l'éclat resplendissant avait quelque chose de lumineux et de divin.

(5) Parse the words in italics in the above passage. Give the feminine plural forms of *lumineux* and *divin.* Decline in full the definite article.

(6) Translate into English :—

(*a*) La jeune princesse, courant un jour dans le château, et montant de chambre en chambre, alla jusqu'au haut d'un donjon, dans un petit galetas où une bonne vieille était seule à filer sa quenouille.

(*b*) Elle les *croyait morts* dèpuis qu'on les avait enlevés sans lui rien dire.

(*c*) Le roi ne laissa pas d'en être fâché, car elle était sa mère; mais il s'en consola bientôt avec *sa belle femme* et ses enfants.

Give the past participle of—*croyait.*
Explain why *morts* has the plural inflexion.
Give the masculine phrase corresponding to *sa belle femme.*

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

The Sallèze Method of Teaching History.

MISS ETHEL REILY says (December, 1899): "A new method of teaching history was invented some fifteen years ago by Madame Sallèze. It is an improvement on the Polish method."

The fact is it is not a new system; but it is the "Méthode Mnémonique Polonaise" which has been in use in France, to my knowledge, for about half a century. It was introduced to my notice while I was a teacher at Queen's College, London, and I adopted and taught it there just forty-five years ago. I too made variations adapting it to English requirements, and changing the arrangement of numbers, so as to get all the units, tens, twenties, &c., in one line. About thirty years ago I published "Chronological Maps" (Bell and Daldy), 2s. 6d. In an early number of the *Parents' Review* I explained the system, and in the *Ladies' College Magazine* I reprinted that article. I have also written of it in "Work and Play in Girls' Schools" (Longmans).

I first saw Madame Sallèze's books ten years ago, at the time of the Educational Congress in Paris. They are good, but I think it better for the children to make their own charts, instead of getting them ready made. It is best for little ones to have merely a blank chart, and to use movable signs. Our kindergarten teacher has flags, tin soldiers, &c. Then, if written signs are used, it is better to put in first only a few dates, and all of these relating to England. This forms a sort of backbone, and later we add other important matters which have more to do with general history. Pupils delight in devising pictures for themselves. Thus one drew a hand in the flame to commemorate the death of Cranmer. A number of daggers marked the massacre of St. Bartholomew. The bones of a hand told of the discovery of the Röntgen rays; a lady riding, of the improvement in bicycles. If a short period is being studied, we have books ruled with squares large enough for us to write in the principal things to be remembered.

This method is far superior to all other systems of mnemonics that I know. Before I became acquainted with it I had drawn up many chronological tables, some of prodigious dimensions, and committed to memory much doggerel verse. I have since discarded all this. It is easy to remember the position of the pictures in the compact century square, and so the date is known without learning; one realises at once from the position the relation of events. In some charts we enter little besides the accessions of sovereigns and a few important events. If studying literature, we add books or a portrait of the author; if science, some picture; if constitutional history, the names of important Acts. The system is easily adapted to many purposes. A Chart of English Literature has been compiled by Miss Heath, of Clifton (J. Baker & Son, 25, Paternoster Square, London, E.C.).

DOROTHEA BEALE.

IT is pleasant to know that a teacher of Miss Beale's experience so highly approves the system of mnemonics described in my article on the "Sallèze Method," and I am quite of her opinion that it is the best method at present known.

My use of the word "invented" was a little unfortunate. Madame Sallèze did not, of course, invent her method, but only adapted it from the existing "Méthode Mnemonique Polonaise," and in the preface of her works she mentions this fact. As in the case of Miss Rundall, and of Miss Beale herself, Madame Sallèze only claimed originality for the manner in which she applied the system.

As regards Miss Beale's remark, that she has found it better for children to make their own charts, instead of having them ready made, and even to use movable signs, I should think this would certainly be the case with quite young children, also where plenty of time can be spared, and in cases where text-books on history are used. But I am inclined to think that for older pupils and students preparing for examinations, where a rapid method of memorising dates and events is required, the prepared charts are preferable, especially for students attending lectures and having no text-books for reference; but this is, of course, only a matter of opinion.

The method can be applied, as Miss Beale says, to almost any subject, and Madame Sallèze has published a chronology of English history (the explanatory notes in French and English in parallel columns), of Scripture history, ancient history, and of "inventions." She tells me she considers the English chronology the best and most complete of her books. I have two or three copies of her books, and should be very pleased to lend them to anyone who is interested in the method and wishes to study it further. It seems a pity it is not better known in England. In connection with this subject, the following communication, which I have received from Madame Sallèze, is of interest:—

"Vous me demandez mon avis sur les tableaux muets et les signes mobiles. C'est en effet ce qu'il y a de préférable pour intéresser les enfants. Cependant on apprend très bien avec les images parce qu'elles restent fixées dans la mémoire et avec chaque siècle toutes les images vous apparaissent à mesure que vous récitez les dates. J'ai eu autrefois des tableaux muets et des signes mobiles sur des petits cartons que les enfants mettaient eux-mêmes dans les cases. Seulement ce n'était pas pratique, parce que cela leur prenait beaucoup de temps et qu'ils perdaient à chaque instant leurs petits signes. Le mieux à mon avis serait de leur faire dessiner le signe dans chaque case et avoir un grand nombre de tableux muets à sa disposition, ou bien encore avoir des petits jetons de différentes couleurs et les disposer sur un tableau muet pendant la récitation. C'est le moyen dont je me suis souvent servi aux cours de Mesdemoiselles Lacorne; mais je vous le répète le meilleur moyen pour retenir les dates c'est de les apprendre en regardant son tableau imagé. De même qu'on doit apprendre la géographie sur la carte et non pas dans le livre."

ETHEL M. REILY.

Apparatus for Determining "g."

THE method of marking a pendulum by a falling weight, which is let *go* at the instant the pendulum starts, is described in Prof. Whiting's "Physical Measurement," as it is also in Mr. Earl's "Elements of Natural Philosophy" recently published. But the apparatus drawn and described in Part I. of Gregory and Simmons' "Exercises in Practical Physics" is not a copy of anything, though it embodies the same combination as those in the other books.

With regard to Mr. Rheam's apparatus, so long in use, we should like to know how harmonic motion is secured by a pendulum swinging on a leather hinge (unless the pendulum be very heavy), and how his sliding weight is arranged so that it is free from the front face of the pendulum, and yet allows the front face to rest in a vertical plane. How soon does his broad-faced pendulum come to rest, and what mark does a spherical weight make on it? What exact line are we to measure from, and to what exact point? About these and other practical points we have no information. Teachers want details. We cannot all design original apparatus; we have no time, nor are we all mechanically apt. In designing apparatus it is as well to eliminate sources of error as much as possible, though it is of the first importance that students should be alive to what may render their results unreliable. In modern quantitative experimental work among children the conditions that make for accuracy are not sufficiently borne in mind: and after all it is a small matter to know that our results are accurate, compared with the importance of knowing whether they ought to be so.

We owe many thanks to Mr. Whalley for bringing the matter forward at the Chelsea Conference of Science Teachers last January, and to the authors of "Exercises in Practical Physics" for hunting out and making generally available (that is where the real utility lies) the design set out in their little book.

Nottingham. W. R. S.

The Quantitative Shibboleth.

I SHOULD like to emphasise the truth of Mr. Picton's warning in the November issue of THE SCHOOL WORLD that the quantitative work which is now usual in many school laboratories may have as little educative value as the now rightly displaced test-tubing. I fear that very many teachers are accustomed to demand of their pupils numberless quantitative determinations which have little or no useful reference to any scientific enquiry. About a year ago a prominent member of the Science Committee of the Headmasters' Association insisted in my hearing that science *is* measurement, and he spoke with satisfaction of a whole term being necessary to complete the determinations of the relative densities of substances lighter than water.

So long as such lamentable views are held by teachers of science classical men may rightly wish to minimise the place of science in the curriculum, and it is still necessary to urge that science must be taught not mainly because it will tell something of the laws of the world in which we live, not chiefly because it will involve measurement and careful manipulation, but because under right guidance it affords every boy and every girl an opportunity to make knowledge for himself or herself.

I suppose that the readiness to insist upon quantitative experiments which are often not necessary parts of any enquiry is not unconnected with the fact that they are readily checked, and that a class engaged upon them is easily controlled.

I do not wish to be misunderstood. Quantitative work has a most necessary place, and I am convinced that it must be employed from the beginning. The history of chemistry shows that little real progress was made until Black introduced the use of the balance, and no more admirable example of the making of knowledge can be found than his research upon magnesia alba. I can state from experience that boys who work out for themselves such a *connected* enquiry as this do gain a habit of enquiry, an accuracy of thought and a faculty for investigation which could never be gained from one hundred purposeless determinations, however accurate they might be.

BEVAN LEAN.

The Friends' School, Ackworth.

A Teacher's Library of Geography.

IF you refer to your issue for last September, you will understand that I take a semi-paternal or godfatherly interest in Dr. Mill's article on a "Teacher's Library of Geography." It seems to me an extremely helpful contribution to the teaching of a subject which has developed immensely since my own school-days. At the same time I am puzzled by one or two points:-

(*a*) Why does Dr. Mill ascribe Mr. Beazeley's "Henry the Navigator" to Messrs. Longmans, and price it at 6s.? Surely it appears in Messrs. Putnam's "Heroes of the Nations Series," at 5s.?

(*b*) Does Dr. Mill deliberately or unintentionally omit all specific reference to reproductions of ancient and mediæval maps? Speaking quite as an interested layman, I should have thought that the comparison of fourteenth-century and sixteenth-century maps was the most graphic and convincing way of realising the importance of the geographical discoveries of the last decade of the fifteenth century.

(*c*) Supposing Dr. Mill agrees with this last lay opinion, would he be prepared to substitute Mr. Keane's recent "Evolution of Geography" for Mr. Beazeley's book? I have nothing to say against Mr. Beazeley's *text*, which I have read with great interest and frequently used; but the old maps are much less clearly reproduced by Mr. Beazeley's publishers than by Mr. Keane's. For all I know, the maps desiderated may appear in Messrs. Philip's "Great Navigators Series," with which I am unacquainted.

Yours faithfully,
C. S. Fearenside.

(*a*) There was no sinister motive. I made a mistake.

(*b*) Deliberately, not unintentionally.

(*c*) Mr. Keane's "Evolution of Geography" was published after my article was written and in type. The maps reproduced in it are very clear; but they are rather interpretations than reproductions of the ancient maps, of which clearness was rarely an attribute. Those who can study early maps in *facsimile* will doubtless learn much from them, but such study is rather for the specialist than the practical teacher. I also am unacquainted with Messrs. Philip's "Great Navigators Series."

Hugh Robert Mill.

[Mr. Fearenside also "made a mistake." The series from which Dr. Mill selected several books for his lists is rightly named "Great Explorers Series."—Eds.]

"Origin of Brushwork" at the English Education Exhibition.

My attention has been called to an exhibit by Mr. T. R. Ablett in the Exhibition now open at the Imperial Institute, entitled "Origin of Brushwork."

Will you allow me to make a formal and public protest against Mr. Ablett's claim to be the originator of brushwork as a means of education for the young.

In consequence of this exhibition of an unfounded claim I am preparing for publication a statement showing the actual facts of the case. In the meantime I will ask your readers to suspend judgment in regard to Mr. Ablett's claim.

Ebenezer Cooke.

62, South Hill Park,
Hampstead, N.W.

PRIZE COMPETITION.

Result of No. 9.—English Essays.

Though the number of essays received from competitors over fifteen years of age was quite satisfactory, the result in the Junior competition was rather disappointing. On the whole the essays were well planned, clearly expressed, and in one or two cases the style was distinctly good. The prize in the senior competition, for candidates over fifteen years of age, has been divided between—

E. MacEwen,
Mortimer House School,
Clifton;
and
F. Otto Inglis,
The High School,
Peebles.

The prize in the junior competition has been awarded to—

Norah Mary Gwynne,
The High School for Girls,
Leek.

But several other essays are also specially mentioned by the examiners in whose hands the award was left. In the senior competition the essays of Violet A. Garnett, Radeclyffe, Clitheroe, and Effie Marsden, Wigan Pupil Teachers' School, are highly commended. Similarly the essays of Ghita Fattorini, St. Monica's Convent, Skipton-in-Craven, and Katie Lloyd, St. Joseph's Convent, Clapham Road, S.W., in the junior competition, are spoken of as "showing great promise." Katie Lloyd, it is pointed out, is only twelve years of age, but her essay is not only excellent, but very nicely written. We are convinced that it would be to the advantage of boys and girls at school if more attention were given to practice in expressing their ideas clearly and briefly, and we shall return to this subject in a future competition.

Competition No. 10.—New Books of Fiction for the School Library.

It has been decided, we will suppose, to add some new books to the School Library of (1) a boys' school, and (2) a girls' school. We offer two prizes of books, each of the published value of half-a-guinea, to be chosen from the catalogues of Messrs. Macmillan & Co., Limited, for the two best lists of **ten books of fiction** which have been published in recent years, one prize for the best list of books for boys, and one prize for the best list of books for girls. The rules for the competition are as follows:—

(i.) Each list sent in must be accompanied by a coupon (p. iv.).

(ii.) No list received after Monday, February 12th, 1900, will be considered.

(iii.) The decision of the Editors is final, and will be published in the March number.

(iv.) The competitor's name and address must be stated on each list returned.

(v.) That list will for the purpose of this competition be considered the best which contains the largest number of the books mentioned most frequently in the lists received.

(vi.) The title, together with the names of the author and publisher of all books, must be given.

(vii.) Replies should be addressed to the Editors, The School World, St. Martin's Street, London, W.C.

OUR CHESS COLUMN.

No 14.

Last year I offered a set of Staunton chessmen to the competitor who gained most points in our competitions during the twelve months. This has been won by

N. P. Wood,
The College,
Regent's Park,
London, N.W.,

with a score of 10.4.

The following deserve Honourable Mention: — A. D. Punchard 9.8.; N. B. Dick 9.7.; A. V. Poyser 8.7. A similar prize will be awarded on the result of the monthly competitions from the present time till the end of the year. Age limit 21. The December competition resulted as follows:—One of Messrs. De La Rue's pocket chessboards and men goes to

P. J. Wood,
Northern Congregational School,
Silcoates,
Wakefield.

Another is claimed by three competitors—E. H. Colman, L. H. Pascall, and H. Dickins, all of the Nonconformist Grammar School, Bishop's Stortford. They will please play off for it. These four competitors each gave all the possible 25 moves in solution to our last problem. Other competitors came out as follows:—N. B. Dick, 25; N. P. Wood, 25; A. D. Punchard, 25; L. Shillingford, 22 C. Mellows, 21; F. H. Leonard, 19; J. V. Middleton, 18.

Here is a remarkable game:

WHITE.	BLACK.
1. P—K4.	1. P—K4.
2. P—KB4.	2. B—B4.
3. P—Q4.	3. P x QP.
4. Kt—KB3	4. Kt—QB3
5. B—Q3.	5. P—Q3.
6. Castles.	6. Kt—KB3.
7. QKt—Q2.	7. Castles.
8. P—K5.	8. Kt—Q4.
9. B x P (ch.)	9. K x B.
10. Kt—Kt5 (ch.)	10. K—Kt3.
11. QKt—B3.	11. Kt—K6.
12. B x Kt.	12. P x B.
13. Kt—R4 (ch).	13. K—R3.
14. Q—Q3.	14. P—K7 (ch.)
15. K—Rsq.	15. P x R (=Q) (ch.)
16. R x Q.	16. Q x Kt.
17. P x Q (ch.)	17. K x P.
18. Q—KKt3 (ch.)	18. K—R4.
19. R x P.	19. R x R.
20. Mate in three!	

Competitors must tell me—

(1) Why did not Black play 10 K—Rsq. or K—Ktsq.?

(2) What is the solution of the mate in three?

On the result of the competition, I shall award half-a-dozen or more copies of a useful little work entitled "Fifty Pawn Puzzles." Young players do not pay anything like sufficient attention to their pawns, and I intend, during the year, presenting many copies of this little guide to pawn play; it will be found exceedingly interesting. Each puzzle is illustrated by a diagram, and there are full solutions.

The above, then, is No. 1 in our 1900 competition. Boys and girls at school are alone eligible for the monthly prizes, and the marks they gain will, of course, count in the competition for the yearly prize mentioned above. Four marks for this month's game.

ANSWERS TO CORRESPONDENTS.

N. B. Dick.—Thanks for your correction. Final score should read—M. T. S. 3; T. H. S. 3.

F. G. M. Beck.—Glad to hear from you again. Will look into games.

RULES.

I.—Solutions to be sent on postcards.
II.—Give name, date, age, and address.
III.—Solutions to be received on or before February 12th.
IV.—Address all communications to

The Chess Editor,
THE SCHOOL WORLD,
St. Martin's Street,
London, W.C.

CALENDAR.

[Items for the March Calendar must be received by February 16th, 1900.]

February, 1900.

Thursday, 1st.—Send in names for Classical Scholarships at Newnham College, Cambridge.

Apply for papers for Elementary Exams. of Society of Arts.

Tuesday, 6th.—Examination for Second Division Clerkships of the Civil Service (see p. 23).

Wednesday, 7th.—Return forms for Professional Preliminary Examination, College of Preceptors.

Professor Lallemand's public lecture on French Literature at University College, W.C. (8.30).

Rev. Dr. Moore's public Lecture on "Dante's Purgatorio" at University College, W.C. (3.0).

Examination for Mathematical and Classical Scholarships and Exhibitions at Exeter, Jesus, and Pembroke Colleges, Oxford.

Saturday, 10th.—Last day for returning application forms for Special Commercial Scholarships for Teachers (p. 62).

Wednesday, 14th.—London University Matriculation Pass List published.

Thursday, 15th.—Return forms for Militia Literary Examination.

Apply for Centre Superintendentships, Intermediate Education Board, Ireland.

Last day for returning application forms for (*a*) Scholarship Examination at Fettes College and (*b*) for Engineer Studentships (p. 63).

Monday, 19th.—Professor Priebsch's public Lecture on German Literature at University College, W.C. (8.30).

Tuesday, 20th.—Examination for Clerkship at Royal Mint (p. 63).

Wednesday, 21st.—Professor Lallemand's Public Lecture on French Literature at University College, W.C. (8.30).

Thursday, 22nd.—Return forms for 1st and 2nd Public Examinations for Women, Oxford.

Return forms for General Examination, Society of Arts.

Wednesday, 28th.—Return forms for Examinations of Intermediate Education Board, Ireland.

Examinations for Classical, Mathematical, and History Exhibitions at Worcester College, Oxford.

The School World.

A Monthly Magazine of Educational Work and Progress.

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The School World

A Monthly Magazine of Educational Work and Progress.

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THE TEACHING OF ENGLISH IN PUBLIC SCHOOLS.

A Collection of Opinions by Experienced Teachers.

The paper on the "Teaching of English in Public Schools," read by the Master of Marlborough College at the Headmasters' Conference, and published in our February issue, has directed attention to the deficiency in the knowledge of their mother tongue, and of their own incomparable national literature, possessed by many pupils who have passed through the course of training at our public schools. It has seemed to us desirable to do something to prevent the importance of the facts which the Rev. G. C. Bell presented to the headmasters of the public schools being lost sight of. We consequently invited several well-known teachers of English subjects to briefly express their views on the questions raised in Mr. Bell's paper, and we have much pleasure in calling the attention of our readers to the following short contributions to the discussion which have been received in reply. These opinions are representative of several phases of British secondary education, and should prove of assistance to teachers in enabling them to decide upon the best method of remedying the defects which unfortunately exist. It must of course be kept in mind that teachers are not exactly free agents in regard to their methods, the scheme of work being often determined more by the requirements of examiners than by personal convictions as to how a subject should be taught. We may therefore remind teachers that our correspondence columns present an opportunity for making known schemes of work which have been found successful, or for the statement of difficulties which are met with in actual practice.

I.—By James Gow, M.A., Litt.D.

Master of the High School, Nottingham.
President of the Incorporated Association of Headmasters.

Those persons who, like myself, desire to see an avowed uniformity in the curriculum of secondary schools of the same type argue only for uniformity of subjects, and, at certain points, uniformity of standard, but do not wish to see uniformity in the methods of teaching. Different teachers of lively wits would treat a subject in different ways, with results which would be equally good or would at least have different merits. For this reason, I do not presume to criticise Mr. Bell's paper on the "Teaching of English" with any reference to "the unalterable rule of right and the eternal fitness of things." In his hands, I daresay, his method would produce admirable results. But to me it would be in some respects uncomfortable, and I shall venture to offer some alternatives, with my reasons for preferring them.

In the first place, I would rather not dissociate the teaching of English from the teaching of other languages, and I prefer to give such English lessons as shall assist in learning foreign languages too. I admit that the association is not necessary, but it seems to me advantageous, considering the mode in which foreign languages are usually taught in our schools. On this ground I would teach English grammar much more thoroughly than Mr. Bell seems to desire. For instance, there are very few sounds heard in foreign tongues that are not used in English. I would therefore teach something of the phonetics of English. Again, the merit of Latin and of German prose, like the merit of pianoforte playing, depends largely on clearness of *phrasing*. I would therefore teach analysis with some care. Again, the external simplicity of English involves a great deal of latent ambiguity, which is a perpetual stumbling-block in learning a foreign language. There are many quite distinct uses of the infinitive, of *a*, *the*, *should*, *if*, *though*, *that*, and other words and constructions, and these distinct uses should, I think, be collected and studied together, and not merely noticed at intervals when one happens to occur in literature or in a passage set for translation.

And this brings me to another point. I am very unwilling—more so than Mr. Bell appears to be—in reading a piece of good literature, to introduce discussions of grammar, unless indeed the author has a characteristic grammar which is part of his style. Grammatical notes, for instance, are as indispensable to Shakespeare as to Horace. But where an author uses normal grammar, I would make no comments on him, except such as assist the comprehension and enjoyment of his work. It is true that Mr. Bell proposes to confine grammatical comment to his book of selections, but it strikes me that the grammar which can be attached to such a book is both too much and too little, too much for the enjoyment of the selections, too little for the proper treatment of grammar itself. I prefer to make, for grammar, a *corpus vile* of my own composition, and, in dealing with a good author, to confine myself to his thought and style and historical connections. Briefly, I would teach grammar and the primary rules of composition quite carefully and systematically up to the 5th Form. After that, I think composition improves with practice as a boy grows in knowledge and courage and grasp. To this growth every subject in the curriculum contributes, and I feel no anxiety about it. Of course, English literature, and especially fine passages learnt by heart, have a potent influence, but still, I would read English literature for its own sake, or (to use the catch phrase) with a view to "character" rather than to "faculty." I mean that it is the habit of reading, rather than the practice of correct writing, that I seek to encourage by the close study of the best authors. I would therefore, unlike Mr. Bell, choose poetry rather than prose, and difficult poetry rather than easy. Just as a young art student begins by drawing on a large scale from the antique, and afterwards finds all other drawing comparatively easy, so, I think, a boy who has studied some noble but difficult works at school will find all other reading comparatively easy. That is as near as we can get to making it delightful. Lastly, in regard to reading aloud, I attach the same importance to it that Mr. Bell does, and would practise it continually, but I should not expect it to be very well done. To read aloud well, impromptu, seems to me the last accomplishment of a literary education.

II.—By E. W. Howson, M.A.

Assistant Master in Harrow School.

I am very glad to do what I can to support the plea of the Headmaster of Marlborough for more systematic teaching of English in our public schools. His paper, read at the Headmasters' Conference, was full of valuable suggestions, and I can only emphasise a few points which seem to me of special importance.

We shall all, I take it, agree that the two chief objects we should keep in view are—first, to enable our boys to express themselves in their own language *grammatically*, *clearly*, and *easily*, and secondly, to persuade them to study with proper appreciation the best models of English prose and verse.

The first result is to be attained by *composition*, the second by *reading*. To take the former of these first: in lower forms we must have some of the drudgery of grammatical analysis, unless, indeed, this has been already got over, as it very easily may and should be, at the preparatory school. But it is, in my judgment, a mistake, and a common mistake, to devote too much time to this somewhat arid labour. It is easy to make a fetish of ingenious subdichotomy till English sentences are converted into a series of water-tight compartments, each labelled with a forbidding name. But for all this, the study of sentence-structure cannot be disregarded. It is the foundation on which to build something more alive and interesting in the shape of original composition.

For beginners there are few exercises better than the reproduction in their own words of a story previously read aloud to them. It compels attention, and draws out the faculty of expression and narration. This is the simplest form of essay, and is within the reach of all. In higher forms it is not hard to devise subjects, increasing of course in breadth and difficulty, which may be treated as material for more advanced composition. But here let me enter a *caveat*. I am absolutely convinced by personal experience that it is essential to guide beginners by suggesting lines of thought, method of treatment, arrangement of matter, authorities to be consulted. The usual practice of hurling a subject at a boy's head without any such assistance, and telling him to make bricks without straw, is as stupid as it is futile. And what I have said about prose essays applies with even more force to verse-composition, a form of exercise which in the case of picked boys might be pursued far more frequently and thoroughly than it ordinarily is. The practice of writing prose essays should be kept up regularly three or four times a term, and an essay should always be included as one of the subjects in the terminal examination. This, I am glad to say, is now the practice at some schools.

So much for composition. As for reading, the first thing to bear in mind is that we must not, and indeed cannot, treat English like a foreign language or a dead language. An English author ought not to be subjected to the ordinary processes of construe and parsing. It is a desecration. We want our boys to learn to appreciate the best that has been written in their own tongue. We do not want to make them use the glowing words of Milton or Burke as pegs for philology or antiquarian lore, still less as a machinery of elaborate verbal analysis. This will only excite aversion. We want them to feel as the writer felt, and to read his words in the spirit with which they were originally written. We want to evoke a sense of style, a critical, though generous, appreciation of what is well and beautifully written. For this purpose in lower forms we can employ repetition. And here, too, as in the case of essays, it is of vital importance to give some preliminary assistance. No passage should ever be learnt by heart, the meaning, beauty, and allusions of which have not been clearly and thoroughly explained. Practice in recitation should accompany repetition where possible, and prizes for elocution should always be offered in every school.

As to the reading of English literature, it should never be taken in snippets, but always in masses. And I have always thought that it ought to be studied in periods *pari passu* with the English history teaching. Typical selections illustrative of the particular historical period under review should form part of the regular work of the term.

Nor must we forget that, after all, *voluntary* reading out of school hours is often the most valuable of all, and prizes for extra-school work should be offered for an examination in periods of English literature, or in particular works of the greater authors. Sometimes, too, if it is possible to find time, an hour can be most profitably spent in reading through with the form a play or poem, merely adding the minimum of annotation and comment.

Among the higher boys it would be a good thing to treat the subject on the lecture rather than the form-system, and this leads me to my final suggestion. The subject is one which demands very special knowledge and study, more, in fact, than can be expected from most form-masters, and it becomes a question whether it would not be well to set apart one master for the teaching of English composition and literature by lectures and essays in all but the lower forms of the school.

III. By C. J. BATTERSBY, M.A.

Senior English Master in Bradford Grammar School.

BROADLY speaking, I agree very heartily with the suggestions in Mr. Bell's paper. I should like, however, to comment on a few points.

BOOKS OF SELECTIONS.

Books of prose selections, if used at all, should be dropped some time before boys approach the age of fifteen, the average limit of age in Mr. Bell's supposed junior school. My reasons are:—

(1) Prose selections, complete in themselves, are difficult to find, and an incomplete selection is a bad model for a boy who is trying to write essays.

(2) Books of selections beget a desire for continual change, and unfit the mind for sustained effort.

(3) In reading books of selections, boys are not kept in touch with any one author long enough to acquire something of his method and style, and as boys learn to write by imitation, this is a serious defect.

Regarding the reading-books as thus closely connected with the writing of essays, I join with Mr. Bell in excluding Shakespeare from the junior school. Simple nineteenth-century English, with more prose than verse, is what the junior boy wants.

SPELLING AND DICTATION.

I note that spelling and dictation are omitted from the junior school course. While I do not approve of the spelling-book, I thoroughly approve of spelling. Columns of words hard to spell, but foreign to a boy's vocabulary, are worthless. Our object should be to ensure correctness of spelling within the limits of the boy's vocabulary. Lists of words often mis-spelt in essays, and of words that belong to familiar topics—for example, naval and military terms—should be drawn up by the master and used to test the boys. As for dictation, so far as it bears on punctuation, it should be taught in connection with the analysis of sentences.

NUMBER OF HOURS TO BE GIVEN TO ENGLISH.

In regard to the amount of time to be allotted to this subject, Mr. Bell asks for not less than two hours weekly. I should claim three, except in the VI. form, where some abatement may be justified on the ground that literary taste is cultivated by the higher study of Latin and Greek, while at the same time the boy has reached an age when English literature may reasonably be supposed to have become a part of his private reading.

SUGGESTIONS.

When possible, the school should buy cheap editions of standard authors in batches of twenty or thirty, according to the average number of boys in a form. Their chief use would be to illustrate passages in the regular reading-books. For instance, after reading Tennyson's "Lady Clare," copies of some book of ballads should be distributed, and a piece like "Sir Patrick Spens" should be studied for the sake of comparison. Occasionally the boys might be allowed to spend a school hour in the quiet perusal of these books, either for their own pleasure or with the object of reproducing their reading in the shape of an essay. From time to time the master should inquire into the out-of-school reading of a form, and take the opportunity of recommending a few books adapted to boys and yet of literary value.

THE ROOT OF THE MATTER.

The chief difficulty is the choice of an English master. The fitness of our classical, mathematical and science masters is warranted, to some extent, by university examinations. But it is not so with the English master, who should be a fair Latin and Greek scholar, know something of French, ancient and modern, something of the great Italians, be acquainted with all phases of the English language and literature from Chaucer's time to the present, have a little sound knowledge of Anglo-Saxon, be somewhat of a critic, somewhat of a writer, a clear and interesting speaker, enthusiastic, industrious, and a lover of noble ideals. Such a man is hard to secure, but, once secured, he must be told by his headmaster to organise the school-work in English, to draw up a full curriculum, to test its efficiency by periodical examinations, and to vary it annually; he should be assisted by men who have an aptitude for the work, and the practice of form-masters taking their own forms in English should be abandoned where the form-masters show no aptitude. With specialists collaborating thus on an organised system, and with a generous allowance of hours for the subject, English should take an honorable position in our schools.

IV.—By Amy Lumby.

Lady Principal of St. Hilda's College, Cheltenham.

Though girls fare somewhat better than their brothers in the opportunities given them for learning the use of their own language, the results are still very disappointing. Most girls of seventeen have a miserably small vocabulary, are deplorably ignorant of the exact meaning of words, and are quite unable to read a moderately difficult book by themselves. They find it very hard to express their thoughts clearly and concisely in writing, and next to impossible to utter them in class in their own words intelligibly. What is the reason of this deficiency? The teaching of English as a distinct subject is neglected. Girls learn most of their lessons in English, and that has to do duty for learning English. They have generally learnt grammar in a dull and mechanical fashion in the early years of their school life, but their French and German teachers will bear witness that they rarely understand the principles of grammar and syntax. They have also usually read a play or two of Shakespeare, and are fortunate if an overdose of "notes" has not given them a dislike to the subject. Beyond this they know very little indeed.

How can these defects be remedied? It seems to me that much could be done by the simple means of making more of the reading-lesson—throughout the whole school course. The first thing children need for expressing their ideas is a vocabulary. How can they get this better than from abundant reading? There are plenty of cheap reprints of English classics and of prose and poetry suitable for all ages to be had now-a-days, and the teacher could easily make a graduated course for her Form. Reading-lessons should occupy at least two hours a week for every form up to the Fourth. On them could be based lessons in inductive grammar, in composition, and in oral reproduction, as suggested by Mr. Bell.

A great point should be made of answering questions in these lessons. No indistinct, incomplete or ungrammatical answer should be allowed to pass. It is delightful to hear the answering of questions in a German elementary school, where the child stands up and, embodying the substance of the question in his answer, makes a clear statement which the whole class can understand, and which not only exercises him in the use of language, but impresses on his mind the facts that he has to remember. The answering of questions in class is usually a very weak point in our secondary schools; hence arises great poverty of thought and language.

The reading-lesson will of course gradually increase in range and difficulty until in Forms above the Fourth, or even before, if the girls are ready for it, it becomes a lesson in literature, such as Mr. Bell sketches. Here, though the highest aim of literature-teaching is the training of the imagination and the ethical sense, and the true teacher will never forget that, yet it is most important not to lose sight of the immense value of training in the accurate and graceful use of words. Exercises in analysis of sentences, examination of the fundamental meaning of words, discussions as to the exact sense of phrases, can all be based on such readings, and no pains must be spared to make the girls secure a definite grasp of the meaning of what they read. "Notes" which are not likely to help them in attaining this may be avoided, and time thus saved to read a great deal more than is usually done. At this stage it will probably be difficult to get more than one hour a week for the English lesson proper, but even in this brief time two plays of Shakespeare and some good essays, say Addison's or some of Bacon's, could be read in the year.

Essay-writing will be seriously begun in the Fourth Form. For this the materials must be to some extent supplied at first, either from the substance of previous reading or from sources indicated by the teacher. The essays must be carefully criticised in class afterwards, and credit given for conciseness and good choice of words. As the girls advance they may well be encouraged now and again to make an attempt in verse, either a translation or original. They will probably produce little that is of any worth, but the effort will give them capital practice in selection of words and will reveal to them more of the meaning of "style" than much talking could possibly do.

It is impossible to go into details in so small a space, but I think it might be a great help to teachers if a few alternative courses of reading suitable for the different forms of girls' schools were drawn up, with a few notes as to the kind of lesson that could be based on them.

SYLLABUS AND TIME TABLES.

By P. A. Barnett, M.A.

When someone said in the presence of Talleyrand that it would be easy to found and establish a religion as good as Christianity, he assented—if the associated phenomena were repeated. A Time Table is the easiest thing in the world to arrange—if the conditions are favourable. It is necessary merely to have entire freedom of action, disinterested and clear views as to the general effect you mean to produce in relation to your pupils, an unlimited staff, and apparatus of the right quality. As the universe is ordered at present, however, few of us are fortunate enough to enjoy the freedom and opportunities which, as we hope, we should turn to such good advantage. We have to make the best of an indifferent matter.

We are first of all not, in most cases, permitted, much less are we actually called upon, to propound our own syllabuses. To propound a syllabus is to formulate for practical application a philosophy of education. When the King is a Philosopher, the first thing that he will set his hand to will be a Syllabus. Our rulers and guides are unable to carry into effect a consistent and statesmanlike plan because, a score of petty kings, they are legislating at cross-purposes. One set of "experts" against another, each sees national, perhaps even human, salvation in some special subjects of study; and each, as Mr. Mantalini would say, "is right and neither wrong, upon my life and soul . . ."

In the vast majority of cases a school syllabus must be drafted chiefly in order to satisfy conflicting claims of various examinations, devised for various purposes, by various authorities. *Conspectus* is therefore unattainable; you can secure nothing better than a more or less ungainly and inharmonious compromise of studies. It may happen, indeed, that a syllabus-maker occupies a sufficiently strong position to be able to snap his fingers at the mischances of examinations, constructing his plan of studies with a single eye to harmony and a harmonious result; and he may find that even his examination results, as assessed by the orthodox examiner, may be told in Gath without bringing shame on him throughout Philistia. But he cannot expect or be expected to compete with the Philistines on their own ground, and to come off with the prime spoils of victory. Indeed, it is essential to the best work of education that the element of fierce personal competition should be excluded from the whole knot of motives to which appeal may legitimately be made.

Most of us, therefore, cannot sit down to compile a Time Table with clear and disinterested devotion to an ideal result in the conduct, character, and therefore highest ultimate good of our pupils. *Populus vult examinari; examinetur.*

The same jumble of conflicting claims and babel of authorities complicates the question of staff. A simpler and more philosophical curriculum would, above all things, revolutionise our notion of specialism, and would set us to look in the first place for teachers who had been trained to consider their task as a whole, as a system of which each part is essential to every other part, all and each contributing to achieve one simple, governing, and pregnant result. Such specialists would be competent — we are now considering strictly "school" training—to deal with several divisions (we will not say "subjects") of a school curriculum, just because the principle of inter-relation would be properly tackled. As it is, in plotting out instruction, we tend to fix our eyes almost solely on the subject-matter, which increases in complexity of articulation with every year of scientific research; for scientific discovery is successful analysis, and the race of specialist teachers increases in the land, and alas! the school. Now see the effect of this in your Time Table. You must cut up your classes, multiply them indefinitely, and increase the number of your teachers, each to deal with a newly-named plot in the ever-widening territory. Specialism, if we are not careful, will land us in chaos; it is the very negation of system. *Οὐκ ἀγαθὸν πολυκοιρανίη.*

All this shows us, if it shows nothing else, how aimless, in any philosophical sense, a time table may be. If you are the ordinary person, working under ordinary conditions, you must provide for half-a-dozen different examinations organised by different people, and you will probably have to provide for different stages of each of these examinations. And then, if you do not turn out a finished pupil satisfactorily equipped in the eyes of each of the classes whose soul is expressed in these organised examinations, you are thought to have failed; and some recording angel writes to the *Times* to say so.

There hardly seems to be any likelihood of remedy for this mischievous state of things until the Man in the Street begins to take broader views, that is, to consider education in a more philosophical spirit. It may warm our hearts to see all sorts of public bodies eager to push their own ideas in the sphere of education, for that is a guarantee of national earnestness and life. But we are face to face with this imminent danger: State opportunism (the politics, as distinct from the statesmanship, of administration) endeavours, not to harmonise these conflicting missionary ideas, but, in the English way, to maintain a shifting equilibrium, so that no one may be able to feel or to say that his particular "interest" is neglected. This is a characteristic danger of democracy; the State authorities confine themselves more and more scrupulously to the duty of interpreting, not leading, public opinion. Here is the core of the mischief of the State organisation of education in a community like ours. A democracy will always heartily curse its own ineffectual idols, either by writing to the newspapers or otherwise.

No one knows how English education may be changed in the cycle that begins with April of this year. Meantime we speak and think as if secondary schools were at present free from the governmental interference which has done so much to give character to and to take character from the primary schools. This, however, is largely a delusion; the strong hand of those whose business it is to interpret in official acts the opinion of the public is to be felt in all schools. Where a school accepts "Science and Art" grants, where it runs departments for the special preparation of boys intending to pass the Army examinations, where the Charity Commission propound a syllabus, where ultimate employment in the public Civil Service determines the trend of a school career, in all such cases it is "Government" that calls the tune. And there is good reason to believe the haphazard character of the programme so compiled, while not without its value in producing variety, deprives us of the power of national concentration of purpose and a uniform national discipline.

No *general* remedy is possible, but there are evidences amongst us of very bold and not in any sense unpromising endeavours in private quarters to try the more philosophical plan; to formulate a clear and definite object having regard to the whole nature and destiny of every pupil; to work without regard to immediate or intermediate achievements in "results," and to control the monstrous regiment of specialism. The Abbotsholme plan, with all its "program" and German affectations, is a genuine effort to this end, and a most valuable experiment.

Out of all the documents displayed at the "Education Exhibition" recently held at South Kensington, there were a few truly bearing on education. Of these the sets of Time Tables from various schools well repaid examination. Tell me how a man spends his time, and I will tell you what sort of a man he tries to be; it is less important to see the shoes he makes, for that will inform me only whether he succeeds in shoemaking. Tell me how you make your pupils spend their time, and I will, with due diffidence, venture an opinion on the ideal of life which you have formed for them. I care less to see their Latin Verses, or a specimen of their Vertical Chiselling, for these show me only a small part of a fragment of the whole process—very important as far as it goes, but, like the right answer to a sum, of less import than the process in its entirety. Mr. Kipling's *Tomlinson* seems to me to be open to a disastrous interpretation. We may expect to be asked not what we have done, but what we have tried and contrived to be doing.

Well, let it be granted that we cannot make what syllabuses we choose; that although we may have tolerably clear views about what wares we ought to provide as philosophers and statesmen, few of us can afford to offer in our shop windows articles which, however good, the public does not want. Our strategy is determined for us; can we turn our tactics to good account? Our syllabuses are sadly to seek; how can we manage our Time Tables so as to get the best out of our defective syllabuses?

The general rules are simple enough. The careful teacher considers pupil and subject-matter of instruction in relation to each other. First he gives to his younger pupil shorter tasks than to the older. He knows that the power of continuous attention grows, under ordinarily favourable circumstances, with the progress of years. The child under seven rarely does well if kept at one series of exercises or operations for more than half an hour at a time; the boy of thirteen and the youth of sixteen can hold out for twice the time; at eighteen and beyond, study is more profitable if more continuous still, a whole morning at one subject being often the best way of tackling it. And for the interested and advanced student, progress is greatest when application is at once more extensive and more intense.

In the second place, and especially during the years when the power of attention is weak and interest needs much artificial stimulus, the tasks requiring greatest concentration and steadiness must come at those hours in which the brain is most vigorous. In most primary schools the need for this is adequately recognised; the Time Tables of secondary schools are not so generally considerate, even in cases in which it would be quite possible to place the heaviest labour earliest without difficulty arising from inadequate staff. For instance, there is a school of some repute which dispenses Algebra to its Fourth Form during the last hour of the weary afternoon; another exacts Latin Grammar from little boys at the bottom of the school within an hour of unlimited roast beef and suet pudding, when by all the laws of physiology their best blood and energies should be operating at the centre and not the top of their bodies. It does not mend matters to devote the early afternoon to gymnastics or violent games; what are we to say of programmes that set little boys and girls to learn the *manége* of the wooden horse at 1.30? It is true that big boys and girls *seem* to get no immediate harm from resorting to football and hockey and the gymnasium at such unholy hours; but an elementary knowledge of hygiene should warn us effectually against imposing such tasks so recklessly on our machinery. One remedy that has been successfully applied to this difficulty is to prescribe for the hour after dinner attendance in the school workshops or in the library, with associated variations on the avocations implied, such as arranging botanical or other like collections, and so forth.

To the third place in point of importance perhaps we ought to assign the principle of Digestion, physical and mental — if such a distinction can be made. The bow that is perpetually on the stretch becomes limp or breaks; even Apollo is not exempt from the law. If we are constantly eating, our digesting organs get no rest for recuperation; if we are constantly feeding our pupils by means of lessons or lectures, there is no time for their brains to recover a *normal* relaxed tone which is essential to real growth. Here I have the record of a school in which the Time Table assumes that profitable intellectual work can go on continuously from 7 to 8 and 9 to 12 in the morning, from 2 to 4 and 6 to 8.30 in the latter half of the day. This is *crambe repetita* indeed. Of course, by repeating the cabbage under such conditions, you can ultimately fill your unfortunate pupils choke-full of cabbage, but it remains cabbage; the result is, so to speak, not chemical but purely mechanical, and not good at that. The result is not a *different* thing, the body and bone and texture of intelligent life, but a degenerate form of the very thing you put in—cabbage. The intervals for digestion in the case of very young children should occur frequently; in older pupils they should be substantially longer, so as to get the advantage, noted in the last paragraph, of intenser and more continuous study where the power of disinterested concentration is strongest and longest. It will be remembered that the late Mr. Sherlock Holmes did not spend all his time in looking at the mud on people's boots and counting stairs; he passed whole days together "doing" nothing; coquetting with a fiddle, smoking, and so forth. But everyone knows the extraordinary attentiveness and concentration which he could command when they were necessary. The fact is, we must give leisure not only for exhausted ground to recover its tone, but also to allow the scattered seed to settle and grow. Growth is almost always insensible. If we try to make the process evident and explicit by perpetual meddling, it is checked. What has been learnt does not pass away because it is not always being repeated; it is finding its place "under the threshold of consciousness," amongst other like matter, and it emerges in its right place when it is wanted, by a process which psychologists find it easier to name than to explain. Young children ought very rarely to be pestered by really severe intellectual tasks; they more healthily spend their time in (their own) chatter and (unorganised) play. Older children chatter less, but, if properly treated, think more; and adolescent and adult students should be left to themselves and their books as much as possible, with just enough "quiz" (American for catechisation) as may keep their faces in the needed direction.

To begin work very early, before the blood is fairly started at its normal pace and is charged with its ordinary supply of working nourishment, is wasteful; and it is wasteful to allow young people to bemuse themselves when the vigour of physical life declines naturally at the end of the day. The practical experiments and experience of the present writer induce him to think that the first error is the worse, and particularly in the case of women. If mental and physical life is vigorous, then boys and girls should have their sleep out. If it is thought well to exact an hour's exertion before breakfast, then the time so spent should be regarded as an "extra"; for instance, it is in one case—a girls' school—made a "penalty" class, defaulters of the previous day reporting themselves for an hour of study or preparation from which others are excused; in a certain boys' school, choice may be made between some athletic exercise or an hour's preparation. Between breakfast and school, again, ample time should be given for the *cura corporis*, neglect of which does such serious damage, especially amongst women.

It may be worth while to look at one or two Time Tables, to see whether we can make any profitable reflections on them. It would be all but impossible to cite types of all the secondary schools that exist, and we must be content, therefore, to note some exemplary characteristics of one or two. One division of the Clifton 3rd Form in the Junior School gives fourteen or ten hours to Classics, to Mathematics six or eight, to English three, to Modern Languages two or six; the alternative pairs are Classics and Mathematics, Classics and Modern Languages. These boys are therefore specialising at an average age of thirteen years eight months; and this is, in effect, the practice at many, if not most, first-grade schools. Higher up the schools, of course, specialisation is more intense; the time given to classics may be, as at Shrewsbury, about seventeen hours, with corresponding varieties in Natural Science or in Modern Languages; and at Shrewsbury the Sixth is practically five different forms. Or take a school of the second grade, say the High School of Newcastle in Staffordshire, where the authorities lament that "the chaotic system of examinations in England *necessitates* elaborate specialism." So, for the Sixth, ten or twelve different schemes might be drawn up to suit the needs of ten or twelve different boys or sets of boys. Here alternatives are offered of (1) Greek, Science, and English; (2) Science and English; (3) Mathematics and English. But, better off than the schools of the first grade, in the second grade schools specialisation usually begins later.

But the closer one scrutinises the details of Time Tables the greater the chaos appears; the unhappy Head Master is not merely between the Devil and the Deep Sea, but between Pandemonium and the whole barren ocean; and no one model Time Table could possibly be drawn up, unless it be at Abbotsholme and Bedales, and the few other schools, like Clayesmore, where private enterprise is bold enough and rich enough to take its own line.

But a minor beginning may be made, and perhaps will be demanded by public opinion, moved, not by philosophy, but by the pressure of daily experience. The relations existing between modern and ancient languages will be modified. Specialisation will be deferred. Training in languages will be considered as a whole, and it will be recognised that the modern language comes properly earliest. First, by the same ordinance that teaches our mother tongue before any other; it is nearest to us, and therefore easiest. Secondly, because it is manifestly of more immediate utility. Bifurcation will occur later, Latin and Greek being placed where their gymnastic and more purely literary effects will work out to greater profit. After languages will come the turn of school "science." The hierophants of applied science are themselves asking that the liberal education should be more carefully given before science specialisation, and we may expect that a progressive course will be devised that shall be itself part of a complete and harmonious school education and shall lead naturally to technical study. When these two great points have been gained, rational Time Tables can be substituted for the present Cats' Cradles, by which schoolmasters and schoolmistresses are made to realise the bitterness of unfruitful organisation.

Meantime, our first and greatest duty is to keep specialism in its place. What we do NOT want is more "specialist" teachers. *Entia non multiplicanda præter necessitatem.*

A Rational Curriculum.—The principles to be carried into practice in a rational curriculum work down to four:—(*a*) That language being useful as the channel for ideas, the linguistic instruction, whether in a living or a classic tongue, shall lead to real familiarity with literary models, and be thorough enough to be a key to national literature and thought. (*b*) That this humanistic training shall be balanced by adequate scientific and mathematical training, dealing with real first principles. (*c*) That time shall be allotted to subject-matter in approximate order of its educational value. (*d*) That handwork and music shall receive recognition.—S. De Brath and F. Beatty in "Over-Pressure." (Philip.)

EXPERIMENTAL CHEMISTRY.

A Course of Work based on the Junior Local Examinations of Oxford and Cambridge Universities.

By Prof. J. B. Coleman, A.R.C.S., F.I.C.
South-Western Polytechnic, Chelsea.

II. The Atmosphere and its Constitution. Nitrogen and Oxygen. Moisture and Carbon Dioxide.

The subject is treated in such a manner as to give the *teacher* working details of the experiments suitable for the course. The experiments, unless otherwise stated, are to be performed by the student. If an experiment is starred (*), it should either be performed by the teacher in the lecture room, or done by the student under the *personal* supervision of the teacher.

It was seen in Section I. that certain substances alter on being heated in air; thus magnesium (Article I., Expt. 3.) was totally changed when heated in the atmosphere. Many substances change even at the ordinary temperature of the air. The rusting of iron is a very familiar instance.

(6) Air Frequently Induces Chemical Action.

That air is necessary in many instances for chemical change to take place may be illustrated by the following experiments.

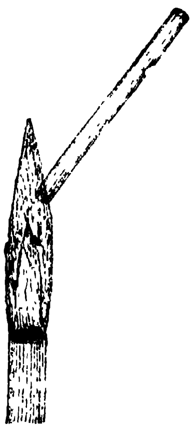

Fig. 3.—Heating sulphur.

Experiment 11.—Heat a piece of sulphur about the size of a pea in a long narrow test-tube (Fig. 3). The sulphur will melt, go off as vapour, and condense in the cold part of the tube. If the sulphur is allowed to stand for some time, it will be seen to have undergone no permanent change. Practically, the air is excluded by the narrowness of the tube, and no chemical action takes place.

Experiment 12.—Take another piece of sulphur and place it upon a fragment of porcelain, or upon the lid of a porcelain crucible, and hold it in the Bunsen flame by means of the crucible tongs. The sulphur will melt, take fire and entirely burn away. This experiment shows that air is necessary for the combustion of the sulphur.

(7) An Increase of Weight usually Occurs when Air Acts Chemically upon Substances.

In the last experiment, although the sulphur increased in weight, the product being gaseous, this increase of weight is not readily shown. If, however, a solid compound is produced, the increase of weight can be easily shown.

Experiment 13.—Break off the handle of a porcelain crucible lid, so as to enable it to lie flat, and place on it a thin layer of finely sifted iron filings (or better, "reduced iron"). Carefully weigh the lid and contents. Next place the lid on a pipeclay triangle, supported on a tripod stand, and heat to redness for ten minutes. Stir the filings occasionally with a stout wire, so as to bring the whole in contact with the air. Allow to cool and weigh again. It will be found that the air in acting upon the iron has caused an increase of weight.

*(8) Action of Phosphorus on Air.

A convenient substance to use for studying some of the properties of the atmosphere is the element phosphorus. Care must be taken in handling it, since it is *very inflammable*, and causes painful burns. For this reason it is kept under water.

Experiment 14.—Cut off a piece of phosphorus the size of a split-pea, using *wet fingers*. Carefully and quickly dry between filter-paper, and place in a small dry porcelain basin. Place the basin on a plate and set fire to the phosphorus by touching it with a hot wire or glass rod. Invert over the basin a dry glass cylinder (Fig. 4), and notice the white substance formed by the burning phosphorus settles like snow on the interior of the jar. When all action has ceased, remove the jar and pour water into it and shake. The water will dissolve the substance, which property is utilised in the next experiment.

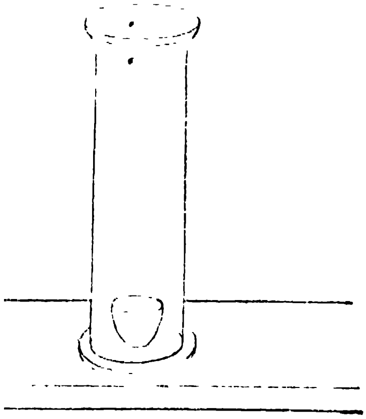

Fig. 4.—Combustion of phosphorus in air.

*(9) The Inactive Constituent of Air called Nitrogen.

If now the phosphorus is burnt in a similar way, but the bottom of the jar is trapped with water, we shall be able to ascertain whether the phosphorus combines with the whole or a portion only of the air so enclosed.

Experiment 15.—Take a piece of phosphorus the size of a pea, dry it as before and place it in a small porcelain dish. Float the dish upon water contained in a stoneware pan, about 10 inches diameter (Fig. 5). Set fire to the phosphorus and immediately invert over the dish a glass cylinder. In order to obtain the level of the water the same inside the jar as outside, it is necessary to proceed as follows: insert a piece of narrow rubber-tube a few inches up the jar and hold the other end in the hand, thus enabling the air in the interior of the jar to communicate with the external air, so that when the jar is placed on the bottom of the pan, the pressure, and therefore the level of water, will be the same inside as outside. The tube may then be withdrawn.

Note down the height of the jar above the water at the *commencement* of the experiment. When the phosphorus has ceased to burn and

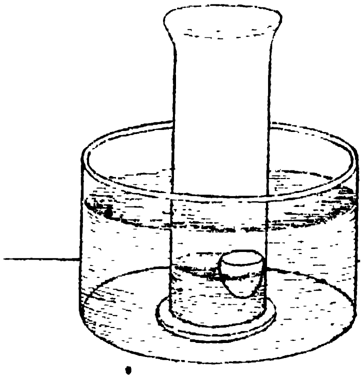

Fig. 5.—Preparation of nitrogen from air.

all the fumes have dissolved in the water, measure the height that the water has risen in the cylinder. Compare this height with the original height, when it will be seen that one-fifth of the original volume of air has been removed by the phosphorus. Now sink the dish by shaking the jar, and slide a glass plate over the mouth of the jar and remove it from the water, placing it on the bench with the plate upwards. Remove the plate and insert a lighted taper in the mouth of the jar; the taper is immediately extinguished. It will be seen, therefore, that four-fifths, by volume, of the atmosphere consists of an inert gas which is called nitrogen, the other portion being an active gas, since on its removal, the residue loses the characteristic properties of air.

The active constituent is called oxygen (see Experiment 17).

(10) Determination of the Proportion of Nitrogen to Oxygen by means of Pyrogallic Acid and Potash.

The composition of air by volume may be more accurately determined by absorbing the active constituent by means of a solution of pyrogallic acid, mixed with potassium hydroxide solution.

Experiment 16.—Close one end of a piece of glass tubing about thirty inches long and half an inch internal diameter. Fit into the open end a rubber cork so that it enters one-quarter its length. Weigh out roughly one grain of pyrogallic acid and dissolve it in about ten c.c. of water. Break off a piece of stick-potash about half-an-inch in length, and drop it into the tube (Fig. 6). Next add the pyrogallic acid and *immediately* insert the cork. Gently allow the liquid to flow from end to end of the tube for about five minutes, so as to absorb the oxygen.

Place the tube in a vertical position with the cork downwards and slip on a rubber band to mark the level of the liquid in the tube. Now place the tube in a cylinder of water and remove the cork. The water will rise in the tube. Slip on another rubber ring at the new level, and measure the distance between the two rings, and also between the upper ring and the closed end of the tube. The ratio between the two measurements will be in the same proportion as the volume of oxygen is to the volume of nitrogen in the sample of air taken.

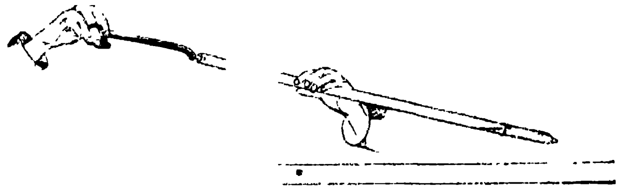

Fig. 6.—Proportion of nitrogen to oxygen in air.

(11) The Active Constituent of Air, called Oxygen.

No simple means of extracting the nitrogen from the air is known, but certain metals will take out the oxygen, from which it may be recovered again more or less completely.

The liquid metal mercury is the most convenient for the purpose, and it may be shown that, if this metal is heated in a confined volume of air, that the active gas will be entirely absorbed, and that inert nitrogen will be left. The substance formed is called red oxide or "rust" of mercury.

The experiment is too difficult for beginners, but we may use the substance to obtain the gas oxygen.

(12) Oxygen from Red Oxide, or "Rust" of Mercury.

Experiment 17.—Place in a dry tube a little red oxide of mercury and heat the powder in the Bunsen flame. As soon as small drops of mercury collect on the cool part of the tube, insert the glowing end of a slip of wood (Fig. 7). The wood

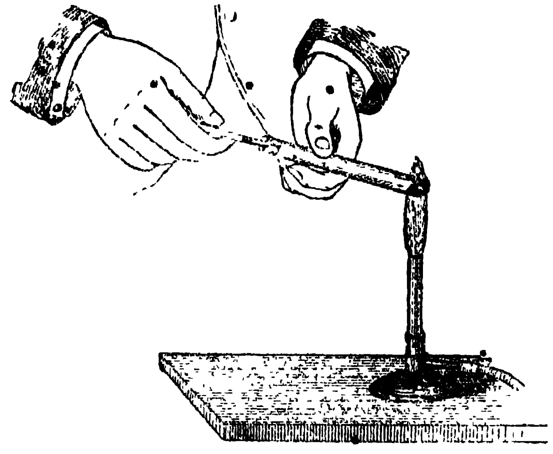

Fig. 7.—Testing oxygen from mercury oxide.

will burst into flame, showing the active nature of this gas.

(13) Preparation and Collection of Oxygen from Potassium Chlorate.

To prepare larger quantities of oxygen gas, a convenient substance to use is potassium chlorate. It is found that if this substance is previously mixed with a little black oxide of manganese, the oxygen comes off more regularly and at a lower temperature.

Experiment 18.—Powder finely in a mortar sufficient potassium chlorate to fill a watch glass, and mix with it about one-fifth as much black oxide of manganese. Heat a small quantity of this mixture in a test-tube as before. The oxygen will be given off very freely, as may be proved by the glowing slip of wood (Expt. 17).

Experiment 19.—Choose a dry test-tube 5 × $\frac{5}{8}$ in and attach to it a bent tube, by means of a sound cork, as shown in Fig. 8. Half fill with water a pot pan of about 10 inches diameter. Place in the pan a beehive cell and have ready a gas jar filled with water and covered with a ground-glass plate.

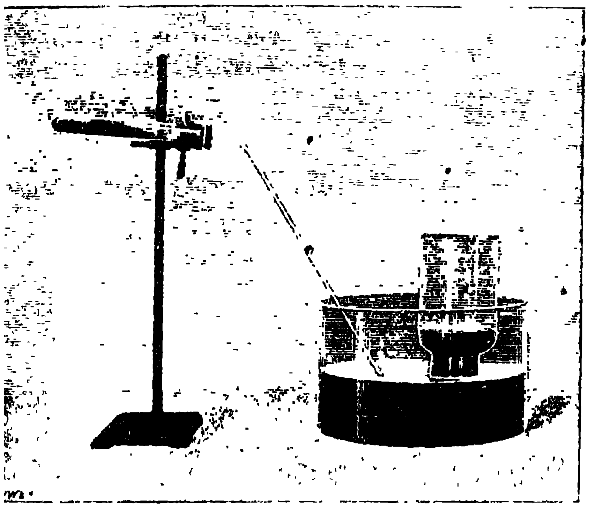

Fig. 8.—Collection of oxygen.

Transfer the mixture (Expt. 18) to the test-tube, leaving a space above the mixture for free egress of gas.

Gently heat the mixture, and when the gas bubbles freely through the water, invert the jar and place its mouth under the water in the pan, finally remove the plate and place it on the beehive cell.

Collect four jars for the subjoined experiments.

(14) Properties of Oxygen.

Oxygen gas is remarkable for the energy with which it combines with or burns many substances. This action is usually called oxidation, or if energetic enough to give out light it is termed combustion.

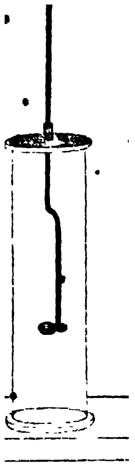

Fig. 9 - Combustion of ch. oxygen.

Experiment 20.—Place a piece of wood charcoal the size of a nut in a deflagrating spoon, and adjust the distance of the cup from the spoon, a convenient distance (Fig. 9). Heat the charcoal in the Bunsen flame until it glows, then quickly place it in a jar of oxygen. The charcoal will burn much more brilliantly and rapidly than in air.

When the charcoal ceases to burn pour in a little lime-water, and notice that it turns milky, due to the formation of a new gas called carbon dioxide.

Experiment 21.—Remove the charcoal and place in the spoon a piece of sulphur the size of a pea. Heat the spoon until the sulphur takes fire, and then place it in a fresh jar of oxygen. Notice the increased brilliancy of the burning sulphur.

When the sulphur ceases to burn, notice the suffocating smell, and that when blue litmus solution is added it turns red, showing the acid nature of the solution of this gas in water.

Experiment 22.—Burn away the sulphur left in the spoon, and when *cold*, place in the spoon a piece of phosphorus, *carefully dried*, not larger than half a pea, taking great care that it does not take fire.

Ignite the phosphorus and place it in a fresh jar of oxygen. The phosphorus will burn brilliantly, forming white fumes. When the action has ceased, dissolve the white fumes by adding a little water to the jar, and add a little blue litmus solution or paper; notice that it is immediately reddened.

(15) Other Constituents of Air.

The other constituents present in air are only present in small quantites. Ozone exists in pure air only—moisture and carbon dioxide in air from all sources.

(16) Moisture in the Atmosphere.

The amount of moisture in air is small, but varies considerably. If, under ordinary conditions, the atmosphere cools down sufficiently the moisture separates out in the form of mist, rain or snow.

A similar effect can be shown experimentally.

Experiment 23.—Nearly fill a 4-oz. flask with water. Carefully dry the outside and add a few grams of solid sodium thiosulphate. The solution of this substance in the water of the flask will cool down the temperature, so that the outside of the flask will be dimmed by the deposition of moisture from the atmosphere.

(17) Carbon Dioxide in the Atmosphere.

In pure country air it occurs in a small quantity, about 4 parts in 10,000, but in dwelling houses, public halls, etc., it may reach 12 parts per 10,000, or even more. Its presence can be shown as follows:—

Experiment 24.—Place a little clear lime-water in a watch-glass, and expose it to the air for 30 minutes. A thin white crust will form on the surface, due to the carbon dioxide of the atmosphere combining with the lime-water.

(18) Main Sources of Carbon Dioxide to the Atmosphere.

The main causes of the presence of this gas in the atmosphere are combustion, decay and respiration. Appended are a few experiments illustrating its production.

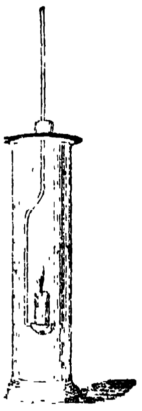

Fig. 10. Carbon dioxide from burning candle.

Experiment 25.—Attach a toy candle to a deflagrating spoon, and place it inside a dry glass jar (Fig. 10). Remove the candle when it ceases to burn and pour into the jar a little clear lime-water. The lime-water becomes milky, showing the presence of carbon dioxide.

Experiment 26.—Fill loosely a tall cylinder with slightly moistened dead leaves. Fit into the mouth of the cylinder a doubly perforated cork. Through one hole push a long thistle funnel until it almost reaches the bottom. Through the other hole pass the short limb of a tube bent twice at right angles; the long outer limb of this tube should reach to the bottom of the cylinder.

When water is poured into the thistle funnel it is evident that the air in the cylinder will be displaced, and will make its exit into the atmosphere by means of the longer limb of the tube.

Allow the leaves to stay in the jar for a few days, and place the end of the long limb of the tube in a little clear lime-water, placed in a beaker.

Pour water down the thistle funnel, so as to force the air of the jar through the lime-water. The lime-water will become milky, showing that decaying leaves give off carbon dioxide.

Experiment 27.—It may be shown that, during respiration, carbon dioxide is given off by the lungs, by blowing through a glass tube into a small beaker of lime-water. The presence of this gas is seen by the lime-water rapidly becoming turbid.

[The illustrations in this article are from the following text-books:—"Practical Inorganic Chemistry," by Dr. G. S. Turpin; "Introduction to the Study of Chemistry," by Prof. W. H. Perkin and Dr. Bevan Lean; and "Chemistry for Schools of Science," by Mr. W. S. Parrish].

PIONEERS IN EDUCATION.

By Foster Watson, M.A.

Professor of the Theory and Practice of Education in the University College of Wales, Aberystwyth.

III.—The Significance of John Locke's Work for Education.

With Locke we enter upon a new educational era. For he is the first of a long series of philosopher educationists such as Rousseau, Kant, Fichte, Herbart. Leibnitz, it is said, placed Locke's "Thoughts Concerning Education" above his "Essay on the Human Understanding." This can hardly be regarded as a serious judgment. For even as a contribution to education, Locke's book is not as quickening as Montaigne's essay nor as original as that of Rousseau's "Emile." It seems to me that the book of Locke, "On the Conduct of the Understanding," is quite as valuable, if not, indeed, more valuable to the student of educational thought, as the "Thoughts on Education." It is short and sustained, philosophical and persuasive. The "Thoughts on Education" are discursive to a degree, sometimes irritating, owing to the fact that originally they were written as letters, and were never properly systematised. But unsystematic as the book is, it commands attention, both as a whole and in all its parts, because everywhere Locke is himself master of the "large, sound, roundabout sense" which attracts his admiration in others.

Nevertheless, I take it that the main value of Locke's contribution to the progress of education is in his attitude to the foundations of educational science, rather than in the practical suggestions, excellent as these are in their substance, in his work, and extensive as they are in number.

Let us inquire into Locke's position in the development of philosophy, particularly with regard to psychology. It is always necessary to bear in mind in the study of educational history that the grounding of ideas into the position of scientifically received principles is the most "practical" work of all. For it affects the ends to which our actions as teachers are directed, and it affects the tone and spirit in which we choose our means and build up our method.

In the "Essay on the Human Understanding" Locke insists, on the positive side, that all knowledge springs from experience, and on the negative side, that there are no "innate ideas" in the mind. There are, therefore, no general, universal, axiomatic principles which can be received other than through an appeal to reasoned experience. Without experience the mind is a blank, a *tabula rasa*. Upon this uniform surface, as on fair wax, impressions are made. Or, to quote Locke exactly, "Methinks the understanding is not much unlike a closet wholly shut from light, with some little opening left to let in external, visible resemblances or ideas of things without." (Essay H. U., bk. ii., cap. xi.) Into this vacancy, as into an empty room, sensation enters from the external world. The mind, thus empty at first, can only be filled through sensation. But note that, in addition to receptivity of sensations, the mind takes notice, when once aroused, of its own operations and the manner of them. This process Locke calls reflexion. From sensation and reflexion, singly or combined, result ideas, and upon ideas the progress and history of the mind depend. From simple ideas the mind produces by combination, ideas of space, of duration, and even of infinity and eternity. However complex an idea may be, it is but the outcome of combinations and associations[1] of simple ideas, "bottomed," as he puts it, in a simple sensation, in a simple reflexion, or in a sensation and a reflexion combined.

Thus, then, Locke has got a classification of ideas, and these he has grounded on sensation and reflexion. But there could not be any reflexion without sensation, for there would, in that case, be nothing to reflect upon. Hence, originally, all our knowledge springs from sensation. *Nihil in intellectu quod non in sensu fuerit.*

Once more, therefore, after a searching inquiry, we are led to the conclusion that the senses require early and careful training. For if we engage in the investigation as to the genesis and combination of ideas in the mind—according to Locke, we not only find that sensation is the earliest form of mental energy, but also that all our later intellectual acquisitions are some form or other of exquisitely arranged and selected combinations of elementary sense experiences. Such a psychology inevitably leads to a distrust of merely verbal knowledge. It makes the demand for real knowledge, and in early life, for knowledge grounded on the training of the power of observation through sensation.

So, in the subjects of instruction which Locke suggests, the teacher is to lay early stress on arithmetic, geography, chronology, history and geometry. Geography should be the first. For it is an "exercise of the eyes and memory." The curious point about Locke in this connexion is that the method of instruction which he advocates leads apparently to the "exercise of the eyes and the memory" on the globes and the maps. "The things" which the pupil will thus "learn by sight and have by rote in his memory" are not "things" at all—but representations, sometimes "far away" from the idea of the things themselves. Yet Locke's principle is sound enough. He had yet to learn that in geography-teaching observation by the child's senses of geographical conditions and relations is absolutely necessary. Locke does not seem to have been a comprehensive reader of educational works. Otherwise he might have discovered (as Mr. Quick points out) that Comenius had long before announced how inevitably geography begins in the earliest sensations. "The elements of geography will be during the course of the first year, and thenceforward when children begin to distinguish between their cradles and their mother's bosom." And so the child goes on to discover "what a field is, what a mountain, forest, meadow, river." Every child, therefore, is geographically, not merely a possible, but an actual Columbus, and has to discover by processes as closely resembling actual observation as possible all his physical geography.

We may, therefore, take it that Locke's subjects of education are to be founded on observation, so as to get a knowledge of the real. Locke, however, is vastly interested in the promotion of verbal accuracy as parallel to mental accuracy. Knowledge is necessary, through the senses. So, too, power of expression through speech is necessary. With the importance of this Locke is so much impressed that the third book of the "Essay on Human Understanding" is devoted to language as the means of expressing ideas clearly. His conclusions are: (1) Everyone should take care to use no word without a signification, no vocal sign without some idea which he had in his mind—and would express by it. (2) The idea for which he uses a sign should be clear and distinct; all the simple ideas it is made up of, if it be complex, should be settled. (3) These ideas must be accommodated, as nearly as can be, to the common signification of the word in its ordinary use. Such rules show how inter-connected the whole idea of language teaching necessarily is with the context or material of thought. They may be taken as a continuation of Bacon's attack on the *Idola*—*i.e.*, the pre-conceptions and lack of clearness due to various causes which cloud our perception of truth.

Language-teaching, we may interpret Locke as saying, is concurrent with thought-development. It is, truly, thought-expression. For this the vernacular is *the* language *par excellence*. Let boys "make their themes in English where they have a facility and command of words, and will better see what kind of thoughts they have, when put into their own language. And if the Latin tongue be to be learned, let it be done the easiest way without toiling and disgusting the mind by so uneasy an employment as that of making speeches joined to it." Hence, the teaching of grammar is discountenanced, until the pupil can speak a foreign or dead language with some fluency. "I know not why anyone should waste his time and beat his head about the Latin grammar, who does not intend to be a critic, or make speeches and write despatches in it." . . . For purposes of reading and of gaining experience from other men's researches, investigations and reflections, a "critical knowledge of the tongue" is not necessary, nor need the mind be charged "with the multiplied rules and intricacies of grammar." Into this *quæstio vexata* it is not desirable to follow Locke at length. It is sufficient to say that language-teaching is to be the objective side of the subjective thought-development. If you wish to follow Plato or Aristotle in their thought, "the critical knowledge" and "intricacies of grammar" may be indispensable. For the rest, dispense with grammar, themes, verses and all the other apparatus of traditional classical instruction—in view of the importance of the matter contained in other languages and the necessity of acquaintance with it. This is the very basis of Locke's position. If it be examined closely it reproduces the well-known encyclopædism of Milton, of Comenius, and of Dury, and the Commonwealth writers generally. It is the Baconian ideal of the circumnavigation of the intellectual world. Indeed, Locke states his view explicitly in the essay "Of Study": "The extent of knowledge or things knowable is so vast, our duration here so short, and the entrance by which the knowledge of things gets into our understanding so narrow . . . that the whole time of our life . . . is not enough to acquaint us with all those, I will not say which we are capable of knowing, but which it would not be only convenient but very advantageous to know. He that will consider how many doubts and difficulties have remained in the minds of the most knowing men after long and studious inquiry; how much in those several provinces of knowledge they have surveyed they have left undiscovered; how many other provinces of the *mundus intelligibilis*, as I may call it, they never once travelled on, will easily consent to the disproportionateness of our time and strength to this greatness of business, *of knowledge taken in its full latitude*, and which, if it be not our main business here, yet it is so necessary to it, and so interwoven with it, that we can make little further progress in doing, than we do in knowing—at least to little purpose—acting without understanding being usually at best but lost labour."

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[1] Professor Fowler says: "Locke appears to have been the first author to use the exact expression, association of ideas." (Locke, Men of Letters Series, p. 141.)

I should be inclined to call Locke the last of the English Encyclopædists. It was comparatively simple for Vives and Erasmus to argue for encyclopædism. The liberal arts were seven in number, easily compassable, and even the classical literature on them could be traversed, if texts were readily accessible. But when the liberal arts passed away, and the inductive sciences arose and knowledge grew from more to more, encyclopædism as the educational end died a natural death, and Locke's words, which I have just quoted, implicitly point out the reason—viz, the mind's inadequacy in a single lifetime to conquer all the world of thought. Locke's course for the youth up to twenty-one years of age includes French, Latin, arithmetic, geography, chronology, history, geometry, astronomy, ethics, civil and common law, natural philosophy, and the other known sciences. Of equal importance are "dancing, fencing, wrestling, riding and learning a trade, a manual trade—nay, two or three, but one more particularly." Now the principle on which each of these subjects, or any other which could be proposed, is to be admitted into the ἐγκύκλιος παιδέια is that of utility to a *gentleman*.

Such seems to be the teaching of the "Thoughts on Education." It is, apparently, consistent enough. Locke begins with sensation and the knowledge derivable from sensation—*i.e.*, knowledge of the outward world, the world of matter, the objective world. This leads him to the desire of the widest knowledge possible—encyclopædism. Encylopædism must, even in Locke's age, have a limit imposed. And looking to the *matter of knowledge*, utilitarianism was Locke's standard in his choice of subjects. Usefulness of matter and rapidity of method are evident *desiderata* for the encyclopædist.

The point of view taken in the "Conduct of the Understanding" must be also stated, for it is necessary as a complement to the teaching of the "Thoughts." In the former book, he says that the teaching of any of the sciences is not merely to get perfection of the matter of one branch of knowledge, but to "open and dispose minds" to all knowledge. The learning of many sciences is not to bring about "a variety and stock of knowledge, but a variety and freedom of thinking." The study of the sciences is, in short, to be regarded as "*an increase of the powers and activity of the mind, not as an enlargement of its possessions.*"

It is here, I think, that we reach the important point in Locke's educational philosophy. He seems, in the "Conduct of the Understanding," to have left the region in which sensation ruled supreme, and to have become clearly conscious of the application in the educational domain of the other mental process of *reflexion*. Whilst he is in the world of sensation, and whilst he keeps the child in it, he entirely leaves out of account the active element in mind which is involved in the reception of sensation, for to him the mind was a *tabula rasa*. But when he looks to "activity of the mind" as the end, instead of "enlargement of its possessions," he has made a most vital qualification, one, indeed, which strikes at the root of encyclopædism as an end.

Having dwelt so long on Locke's encyclopædic attitude, and having stated the qualifications which he thus introduces in his "Conduct of the Understanding," as applying to the whole circle of instruction, it is desirable to further minimise its place in his views by saying that he put learning as the last of the great objects of education, and thought it "the least part." "When I consider," he says, "what ado is made about a little Latin and Greek, how many years are spent in it, and what a noise and business it makes to no purpose, I can hardly forbear thinking that the parents of children still live in fear of the schoolmaster's rod, which they look on as the only instrument of education, as a language or two to be its whole business." Then, what is to come *before* learning? This is Locke's answer: "Seek out somebody that may know how discreetly to frame his manners. Place him in hands where you may, as much as possible, secure his innocence, cherish and nurse up the good, and gently correct and weed out any bad inclinations and settle him in good habits. This is the main point, and this being provided for, learning may be had into the bargain." And again, in another place, he puts virtue and wisdom before manners, as educational aims.

I cannot attempt to go into the details of Locke's books. But even in a short account the philosophical detail must not be omitted. "There are," he says, "a thousand other things (besides those he has included in his 'Thoughts') that may need consideration; especially if one should take in the various tempers, different inclinations, and particular defaults that are to be found in children and prescribe proper remedies . . . . Each man's mind has some peculiarity, as well as his face, that distinguishes him from all others; and there are possibly scarce two children who can be conducted by exactly the same method."

Herein, it seems to me, is a great merit of Locke. He calls attention to the psychology of childhood. He demands adaptation of the instruction to it. He determines his method according to the priority of the development of mental power—in the "Thoughts," grounded chiefly on the sensations, but in the "Conduct of the Understanding" on reflexion. He thus attempts to establish, by a scientific method of inquiry, the method adopted from an *a priori* standpoint by Comenius, especially in connection with observation from sense-experience. Locke inquired into the nature of the human mind and disclosed the fitness of "real" studies, not because they work well in school-experience, not by guess-work, not by pedagogical intuition, but from a survey of mental processes, from an analysis of the growth of knowledge in the mind. Locke built up an introspective method of psychology—a method which has seen so fruitful a development; he employed, too, the comparative method, as Professor Fowler points out, by constant references to the minds of children and savages, and by appeals to the variety of moral sentiment in mankind.

Speculations involving the introspective and comparative methods must engage the mind of the educator. His problem is: How can a mind of a relatively mature kind influence towards a given aim the mind of a relatively less mature kind? For a solution of his problem it is clear that the educator must follow Locke's lead; he must study mind introspectively and comparatively, if he wishes to proceed on rational as opposed to merely empirical method.

The significance for education of John Locke seems to be that he required that "learning" shall accommodate itself to the order of development in the mind, that "learning" is only a means to an end: it is the material out of which the form of the human being is to be shaped. In that "form" the order is: virtue, wisdom, manners, learning. This and all other similar questions for their discussion require a reference to the analysis of the human mind. This again requires methods such as Locke employed in the "Essay on the Human Understanding" and the "Conduct of the Understanding." Hence there is little wonder that, since his time, modern educational thought has been built up on the foundations of Locke or on developments from them. With the development of psychology from Locke onwards, both in England and abroad, has gone, almost *pari passu*, the development of educational theory. The first of the educational writers to profit from Locke was Rousseau.

NOTES FOR LANTERN LECTURES.

By C. S. Fearenside, M.A.(Oxon.), and A. Johnson Evans, M.A.(Cantab.).

II.—The Beginnings of English Colonisation, 1492—1640.

The following notes provide the groundwork for a popular lantern lecture on the beginnings of English Colonisation—a topic which may reasonably be found interesting and seasonable now that we are engaged in a "colony-war," in which our opponents belong to the race with which we began to quarrel before we had quite finished with Spain. All or any of the slides described can be purchased from Messrs. Newton and Co., 3, Fleet Street, London, E.C., for 1s. each, and, if required, a lantern and its accessories can be hired from the same firm. Messrs. Newton have kindly put aside the set required for the purposes of this lecture, and will lend them on the usual terms to readers of The School World who may wish to use them.

It has, of course, not been possible to describe in detail the points illustrated by the slides, but sufficient has been said to show their significance, and to serve as notes for the lecture. Illustrative details can be found in the following books, which all combine the qualities of goodness and cheapness:—

(1) "The Story of Geographical Discovery." By Joseph Jacobs. (Newnes.) 1s.

(2) "European Colonies." By E. J. Payne. (Macmillan.) 4s. 6d.

(3) "A Short History of the Expansion of the British Empire." By W. H. Woodward. (Cambridge University Press.) 4s.

(4) "The Expansion of England." By J. R. Seeley. (Macmillan.) 5s.

(5) "Source-book of American History." By A. B. Hart. (Macmillan.) 3s. 6d. net.

Of these books (1) shows how the Europeans discovered a place suitable for colonisation; (2) tells the story of the colonisation in a full yet condensed way; (3) is a narrative, (4) is an analysis of the colonising activity of our countrymen. Seeley is the most helpful; but he assumes a knowledge of the sequence of the events the significance of which he unfolds.

Slides Required.

The following are the slides required for the lecture. The numbers in brackets are from Messrs. Newton's catalogue, and in ordering any of the slides for purchase it is sufficient to refer to these numbers. The set cannot be divided for hiring purposes, but must be taken as a whole. The list of slides need not be given in making application for the loan, as Messrs. Newton will understand what is required if the set described in these notes is asked for, and mention is made of The School World.

N.B.—In giving the order care should be taken to state definitely whether the "Supplementary Slides" are required.

1. Tudor Sovereigns (CX173).
2. James I. 1603-1625 (CX309).
3. Charles I. 1625-1649 (CX329).
4. Map of the World on Mercator's Projection (KD62).

[N.B.—This slide will be wanted several times during the lecture.]

5. Christopher Columbus (CX181).
6. Sebastian Cabot (DA407).
7. Henry VII. (CX175).
8. Sir Thomas More (CZ169).
9. Henry VIII. (CX187).
10. Philip and Mary (CX240).

11. Siege of Calais (CX249).
12. Elizabeth (CX251).
13. Sir Martin Frobisher (CZ188).
14. Sir Francis Drake (CX284).
15. Drake receiving his Knighthood (CX285).
16. Seaward view from Plymouth Hoe (GR301).
17. The Spanish Armada in sight (CX300).
18. The Spanish Armada. The Battle (CX301).
19. Sir Humfrey Gilbert (DA685).
20. Sir Walter Ralegh (CX286).
21. Ralegh's Cell in the Tower (KX37).
22. Unite of James I., 1604. First coin which bore the legend "Great Britain" (DA642).
23. Sir Francis Bacon, Viscount St. Albans (CX304).
24. The English Colonies in America, 1640 (DA684).
25. Captain John Smith (DA687).
26. Sir Harry Vane (CX353).
27. Fugitives for Conscience Sake leaving the Flemish coast for America (CX299).
28. Fugitives leaving Leyden in the *Mayflower* (CX323).
29. Departure of the *Mayflower* (CX322).
30. The Pilgrims signing the Compact on board the *Mayflower*, November 11, 1620 (CX321).

[N.B.—A facsimile of the Compact is given in Hart's "Source-Book".]

31. The First Sabbath in New England (CX324).
32. William Laud, Archbishop of Canterbury (CX333).
33. Quebec from Point Levis (OF85).
34. Henrietta Maria, Queen of Charles I. (CX330).
35. George Calvert, 1st Lord Baltimore (DA688).
36. Medal of Cecil Calvert, 2nd Lord Baltimore, and his wife (DA689).

Supplementary Slides.

(*Illustrating the Ships of the Period*).

37. A fifteenth century Ship (CZ151).
38. Large Ship and a Boat of the 15th Century (CZ152).
39. The Ship *Harry Grace à Dieu*, built for Henry VIII., 1512 (DA419).
40. Henry VIII. embarking at Dover, 1520 (CZ161).
41. *The Ark Ralegh*, Sir Walter's flagship (CX303).
42. The Spanish Armada (CZ189).
43. Ship of Buckingham's Fleet (DA678).
44. The *Sovereign of the Seas*, temp. Charles I. (CZ218).
45. Shipping in the Thames, c. 1666 (CZ231).
46. A Briton Coracle (KO9).
47. A Norman War Ship (KO12).
48. A Modern Liner (KO11).

Lecture Notes.

DURING the introductory talk the lecturer who uses the supplementary slides might have the series of ship pictures run through the lantern.

I.—INTRODUCTION.—The dates in our headline, like most dates affixed to general movements, are misleading without some explanation. In one sense English colonisation began long before **1492**, and in another sense it did not begin till some time after 1492. The English colonised South Britain about a thousand years before 1492, while their colonisation of the Alleghany sea-board of North America did not effectively begin till more than a century after 1492. Why then choose 1492 as our starting-point? Because it was in that year that the epoch-making voyage took place which immediately led to the revelation of America to Europeans.

That accounts for our starting-point, **1492.** Now for our halting-point, **1640.** We have all grown accustomed to Freeman's division of English and Northman attacks on Britain into three stages:—

(*a*) **Plunder** or Prospecting: The stage of finding out what there is to be had in a certain region, and making the existing inhabitants pay for the expenses of exploration.

(*b*) **Settlement** or Colonisation: The stage of going to the region to stay, as in a home, as contrasted with going for what one can get to bring home.

(*c*) **Conquest** or Acquisition of such regions, not from the original inhabitants, but from people like ourselves who anticipated us as colonisers.

Now this triple arrangement is also applicable to English activity in America. On the present occasion we shall deal with the first two stages—**Plunder** and **Settlement.** The assembling of the Long Parliament of the Puritan Revolution, in 1640, marks the close of the "first rush" for the New World. By that time most of the peaceful settlements of Englishmen in North America had been made and also the neighbouring settlements, which shortly afterwards we found it desirable to begin to conquer from their foreign colonisers—Dutch, Swedes, Spaniards and French.

Slides **1, 2, 3,** show the rulers of England during our period.

So much for our chronological limits: before we come to the story and to the pictures note the essential **Conditions of Colonisation**:—

(i.) **Place to Colonise:** *i.e.*, a region not overcrowded with people strong enough to defend their own, and having a climate and soil attractive to the would-be colonists. This excludes India and the Tropics from our present subject-matter.

(ii.) **Desire to Colonise:** Men seek new homes across the seas either from a sheer spirit of restlessness and adventure, or to better themselves in some way—to escape poverty or government which they find oppressive.

(iii.) **Capacity to Colonise:** The English were late in the field, but have so far proved the most successful colonising nation of modern Europe.

II. DISCOVERY OF A PLACE TO COLONISE, *i.e.*, practically, **America.** [N.B.—The story of **British** (not **English**) colonisation in South Africa belongs wholly, and that of Australasia belongs almost wholly, to the present century.]

[*Slide* **4.**]—In 1400 very little was known of Africa; the existence of America and Australia was unsuspected; and the earth was commonly conceived as a flat surface having Jerusalem at the very centre. For various reasons there arose during the fifteenth century a widespread desire to find an all-sea route from Europe to the East. Hence:—

(1) **The Voyage of Columbus.**—An Italian navigator, equipped by Isabella of Castile, **1492** [*Slide* **5**]. Thinking the world to be spherical, he tried to reach India by sailing westwards; he stumbled across the islands which he took to be the eastern fringe of Asia; and the name West Indies perpetuates his blunder. [*Replace slide* **4.**]

(2) **The Voyage of the Cabots, 1497** [*Slide* **6**].—The merchants of Bristol sent out an expedition under the Cabots (who were of Italian parentage) to discover a practicable route on the lines of Columbus, but farther north. The slide shows Sebastian Cabot, now generally regarded as a humbug; his father, John Cabot, should have the credit for the discovery of "Newfoundland." Henry VII. [*Slide* **7**] took an active interest in Cabot's discovery, and rewarded the explorers out of his own purse. Newfoundland has been called "the first English colony:" really, it was used as a place to dry fish at, not to stop at (Kipling's "Captains Courageous").

(3) **The Voyage of Vasco da Gama, 1497-1498** [*Slide* **4** again].—Following up the explorations which Prince Henry of Portugal, grandson of John of Gaunt, had directed along the African coast, Vasco da Gama rounded Cape of Good Hope,

spent Christmas-day at **Natal,** and crossed the Indian Ocean from near Mombasa (now British) to Kálikat. He thus solved the problem which Columbus had failed to solve.

(4) **First Circumnavigation of the World, 1519-1521:** begun by Magellan and completed by Sebastian del Cano proved that the world, whatever its exact shape, was not a plane surface. Trace these routes on the map of the world; show how little was contributed by England towards these early discoveries; and indicate the rewards gained by Spain and Portugal:—

(*a*) **Spain:** Most of South, and part of North, America; West Indies; Philippines.
(*b*) **Portugal:** Brazil; claims to Africa; Malabar Coast of India.
} United under Philip II., 1580.

Point out surviving fragments of these vast colonial domains, all acquired before English possessed a foot of territory outside Europe.

Under the first three Tudors, Englishmen contented themselves with taking part in the Newfoundland fisheries, and with feeling a curiosity about the New World. "Books about which were in every man's hand," says More [*Slide* **8**] in his "Utopia." As yet only the fringe of America was known: hence More could picture an ideal state in the unknown interior. Twenty years ago a fancy state could be pictured in the unknown region now called Rhodesia (Haggard's "King Solomon's Mines"). But the increased attention paid to Ireland by Henry VII. and Henry VIII. [*Slide* **9**] is a harbinger of the time when English would cease to face Europewards, and would face westwards.

III. THE STAGE OF PLUNDER.—(1) **The Reign of Philip and Mary** [*Slide* **10**] forms a landmark from our present point of view:—

(*a*) Systematic colonisation was attempted in Ireland: hence "King's County," "Queen's County," "Philipstown," "Maryborough."

(*b*) Religious refugees take shelter on the Continent: later they prefer "to go forth into the wilderness."

(*c*) Loss of Calais, 1558 [*Slide* **11**] deprives England of the last vestige of her Continental territory: henceforth her desire for territorial aggrandisement is driven to seek satisfaction outside Europe.

(*d*) England becomes a Spanish dependency: Philip II.'s natural wish to restore that state of things after his wife's death is the prime cause of the plundering activity of Englishmen in the Spanish parts of the New World during the reign of his wife's sister, Elizabeth.

(*e*) Search for North-East Passage to India by Willoughby and Chancellor [*Slide* **4**]: they cannot get beyond Archangel, but the voyage marks the beginning of the continued maritime activity of Englishmen.

(2) **Elizabeth's Reign** [*Slide* **12**].—"The spacious times of Great Elizabeth": the point of Tennyson's line is illustrated not only in literature, but also in the exploits of the Devon seamen in her reign, "for God and gold" (in Mr. Corbett's words). Illustrations:—

(*a*) Frobisher's voyage. Point out Frobisher's Strait on the map; then *Slide* **13**; replace *Slide* **4** and show the sphere of Hawkins' and Davys' exploits.

(*b*) Drake's circumnavigation [*Slide* **14**].—Trace route round the world on *Slide* **4**; then show his reward [*Slide* **15**]. Mention his other raids and his historic "rubber of bowls" [*Slide* **16**].

(*c*) Defeat of the Spanish Armada [*Slides* **17, 18**].—The defeat gave England the command of the seas and Englishmen confidence in their own powers: hence the transition from the plundering to the settling stage.

IV. THE STAGE OF SETTLEMENT, **1583-1640.**—The doings of the Elizabethan Chartered Companies (Muscovy—Levant—East India) lie outside our special topic. The principal English colonial pioneers of Elizabeth's reign were **Gilbert** and **Ralegh.**

(1) Sir Humfrey Gilbert [*Slide* **19**].—Story of his going down in the *Squirrel.*

(2) Sir Walter Ralegh [*Slide* **20**].—The expeditions which he sent out to colonise Virginia were unsuccessful; but his prophecy came true—"I shall live to see it an English nation." Imprisoned after the accession of James I. [*Slide* **21**], his work fell into other hands.

(3) James I., King of England.—He was the first English king to call himself "King of Great Britain" [*Slide* **22**]: his reign also witnessed the effective beginnings of what we now call "Greater Britain." Not much regarded at the time; but note Bacon's "Essay on Plantations" [*Slide* **23.**] In James I.'s reign the Elizabethan "Kingdom of Virginia" [*Slide* **24**] was divided between two companies, one of which settled Virginia proper, while the other allowed the Dutch to seize the best place in its "sphere of influence" (the Hudson Valley).

(*a*) **Virginia** [*Slides* **25-27.**]—An aristocratic settlement of slave-holding planters: also a convict station.

(*b*) **New England** [*Slides* **27-31.**]—Tell the story of the Pilgrim Fathers moving from Scrooby to Leyden, thence to New Plymouth; distinguish between the Separatist and Non-Separatist Puritans; between Plymouth and Boston; between theocratic Massachusetts and "soul-liberty" Rhode Island; John Robinson and Roger Williams. [Prof. Hart's *Source-Book* invaluable here.]

(4) Charles I. (1625-1649), under the influence of Archbishop Laud [*Slide* **32**], adopted an ecclesiastical policy which rapidly increased the number of Puritan emigrants to New England. He tried to maintain an effective control over the colonies, but their distance made them seem a secondary consideration; so, too, he cheerfully surrendered to the French (*a*) Quebec, captured by the brothers Kirke in 1630 [*Slide* **33**], and (*b*) Acadie, which Scotsmen had tried to make Nova Scotia in James I.'s reign. But he encouraged an attempt made to find a refuge for English adherents of Roman Catholicism, who, like the Puritans, objected to the system of ecclesiastical uniformity enforced by law. This colony, which lay north of Virginia, was named **Maryland,** in honour of Charles I.'s Roman Catholic wife, Henrietta Maria [*Slide* **34**], while its capital was named **Baltimore,** after its founders, the two Calverts, father and son, who successively bore the title of Lord Baltimore [*Slides* **35, 36**].

V. CONCLUSION: ENGLISH COLONIES IN 1640 (1) [*Slide* **4.**]—The period under survey thus falls into three roughly equal periods of half-a-century each:—

(*a*) **The Period of Discovery,** during which Spain and Portugal take the lead, and England does little but look on.

(*b*) **The Period of Plunder,** during which the English, the Dutch, and the French—the initiative is due to private enterprise rather than to State policy—begin first to attack, then to compete with, the Iberian nations in the New World. Here recapitulate the chief scenes of English activity—North-East Passage, North-West Passage, Circumnavigation, West Indies, and East Indies.

(*c*) **The Period of Settlement,** during which Scotsmen fail to colonise Acadie, and Englishmen make plantations in North America; while Scotsmen and Englishmen join in planting colonies in Ireland.

South Africa is still left alone by both Portuguese and Dutch, while Australia is known only vaguely as "New Holland." Practically the only sphere of English colonisation is North America.

(2) [*Slide* **24.**]—In North America the English have successively made settlements in—

(*a*) **Virginia, 1607.**

(*b*) **New England, 1620-1640.**

(*c*) **Maryland, 1634.**

The later colonies of **Carolina (1667) and Georgia (1723)** were practically cut out of Virginia.]

Meanwhile the **Dutch** have made settlements in the **Hudson Valley** and the **French** in the **St. Lawrence Valley**: but these are afterwards conquered by the English—in **1667** and **1759** respectively. The Dutch colonies are the first to be attacked seriously because they broke the continuity of the English colonies along the Atlantic sea-front. The French encroachments on the English hinterland, are less obvious to the English Home Government.

NOTE.—If pieces of cardboard, or some other opaque paper, can be cut so as to leave exposed only those parts of *Slide* **4** which show parts of the world known to Europeans at a given time, by this means the progress of the geographical discoveries which preceded the period of English colonisation could be graphically presented to the audience.

PLAY-HOUR BOOKS.

THERE are some questions which no one man can answer. Many minds, many generations are required for their elucidation. "What should children read?" is a question of this kind. It is only next in importance to the question, "What should children eat?" Indeed, from one point of view, its importance is even greater than any inquiry concerning physical nutriment can possibly be. So much depends on the scale by which we measure progress. If progress be but the building up of the largest attainable quantity of muscular tissue and brain-cell, and has only a secondary concern with intellectual and moral development, then the question of providing our children with nutritious mental food is merely subordinate and inconsequent; but if progress be measured by the capacity which one generation evinces above another to hold in subjection its brute instincts, to enlarge its intellectual outlook, and generally to profit by the experiences and legacies of the past, then we cannot apply ourselves too strenuously and rationally to the task of catering for the child-mind. Of books we have good store. There is not a wonder in the heavens above, nor in the earth beneath, nor in the waters under the earth, but what we can bring to the focus of the eyes of youth. We can introduce them to the men who have been, who shall be, and who have never been and shall never be. Or we can give them present-day realism writ down—very much down, sometimes—to their level. It is the profusion of the fruit of the garden which perplexes us. Our trouble is not Where? but Which? The crux of our difficulty is selection. And here we call in the past to aid us: here the voices of many of the wise go far towards answering our question. Their verdict is by no means harmonious, but that is part of our answer. One authority will tell us that, as we may be ignorant of the bent of any particular mind, it is best to let the child rove at will in the broad fields of literature to choose or to reject as inclination decides. Another warns us to avoid this course as we should avoid a plague, to give no book to a child unless we have ourselves read and approved it as suitable to the child's age, capacity, and probable future. Between these extremes there is a happy mean. It is good that our host in the country point out to us the pleasant nooks, the quiet glades, the vantage-grounds where fair prospects may be viewed; but it is not good that he prohibit us from wandering at will if so the inclination takes us. It is good, too, that those who have found the choice books of all time and the choice passages of those books direct us to the same treasure-trove; but it is not good that they bind us by a rule of conformity. Our golden mean lies in wise direction apart from rigid proscription.

Inasmuch as the number of suitable books for children is far in excess of the opportunity to read them, and inasmuch as for one child who will choose profitably a score will choose injuriously, some sort of selection and classification becomes a necessity. This necessity has recently pressed upon the Corporation of West Ham, and has led to the publication of an interesting *plébiscite* promoted by the *Daily News* on the "Best Hundred Books for Children." The *plébiscite* list is instructive as a verdict on the most popular children's books, but, to quote the *Academy*, "as an advisory document the list is a failure." The competition was, however, productive of a most valuable list sent in by one of the unsuccessful competitors, Miss M. Grace Mackay—a piece of workmanship obviously too independent to have any chance of a £10 prize depending on a popular vote. Though the limits of this article do not permit the reproduction of the list, its chief points of value—viz., its classification and the percentage of books to be allotted to each class—are here given—

I.	Fairy Stories	7
II.	Myths, Legends, &c.	9
III.	Animal Stories	4
IV.	Natural History	4
V.	Travel, Adventure, &c.	6
VI.	Stories with Historical Settings	13
VII.	Stories written for Boys	12
VIII.	Stories written for Girls	8
IX.	Biography	5
X.	Miscellaneous	29
XI.	Poetry	3
	Total	100

This should be an invaluable help to those who contemplate forming, or who have to regulate, school libraries. The compiler says, "It would be well for girls to read the boys' books and *vice versâ*." The list compares strangely with the *plébiscite* selection, which gives percentages as follows:—

Fiction (including three annuals)	92
Poetry	4
Science	2
Travel	1
Biography	1
Total	100

Miss Mackay enumerates only thirty-four of the winning books. The *plébiscite* selection does not include a single one of her six books of travel and adventure, which are: "Our Soldiers," by Kingston and Henty; "The Story of the Indian Mutiny," by Ascott R. Hope; "Tropical Africa," by Henry Drummond; "Unbeaten Tracks in Japan," by Mrs. Bird Bishop; "A Voyage Round the World," by W. H. G. Kingston; and "With Nansen in the North," by Hjalmar Johansen.

A stereotyped children's library we do not want. The more need, therefore, for a broad classification rather than a strict selection. But even this must vary with local and other considerations. And, after all, a child's general reading must be chiefly recreative. Fiction must preponderate, for the child lives in an ideal world where all dreams are real and all impossibilities possible. Perhaps through pure fiction alone can a restless child, with no apparent powers of application, attain the habit of fixed thought. To create and develop sustained consecutive attention, even though its original objective be frivolous, is no mean function of a school library. It is obvious from the replies of nearly a thousand readers of the *Daily News*, that, for many years to come, our children will find delight in "Robinson Crusoe," "Andersen's Fairy Tales," "Alice in Wonderland," "Tom Brown's Schooldays," "Pilgrim's Progress," "Grimm's Fairy Tales," "Little Women," "Arabian Nights," "Little Lord Fauntleroy," "Alice Through the Looking-glass," "Waterbabies," "Lamb's Tales from Shakespeare," "Uncle Tom's Cabin," "Treasure Island," "Swiss Family Robinson," "Ivanhoe," "Gulliver's Travels," "Westward Ho," "Jungle Book," "Wide, Wide World." These are the first twenty books arranged in order of merit on the *plébiscite* list, of which fifteen are approved in the model list of Miss Mackay. Would that the remaining eighty showed as wise a selection! But then we do not expect the tail to be as wise as the head. Nor let any teacher find fault without first reflecting that the books drawn from the library are to some extent a commentary on his methods in the class-room. Only let him make science, history and literature attractive, and he will send his pupils to "Darwin's Voyage of the Beagle," rather than to "Round the World in Eighty Days;" to "Men who have Made the Empire," rather than to "The Child's History of England;" to "Ethics of the Dust," rather than to "King Solomon's Mines."

OBJECT LESSONS IN BOTANY.[1]

By C. von Wyss.

North London Collegiate School for Girls.

May I use the word Nature-lesson instead of Object-lesson? The latter does not seem to me altogether satisfactory. I know that by the "object" of our Object-lessons we mean any concrete thing presented to the senses, and that by an "Object-lesson" we mean the guided study of an object leading to a knowledge of its properties. But do we not call a lesson a History-lesson if our purpose is to give a knowledge of history? So in this case, where the materials are animals, plants, minerals, where our purpose is to cause a knowledge of Nature and its laws to grow, where the objects are but the means and steps whereby to attain such knowledge, it seems to me the word Nature-lesson is better, though it is narrower in meaning, as it excludes such valuable lessons as those on manufactured articles. May they ever be excluded!

Next I would like to make it quite clear that I would never of my own choice give Nature-lessons in Botany to little children. In the face of all the good that pupils have derived from the study of Botany, this statement may cause surprise if not indignation. I will explain.

There is round about us a vast world of animate and inanimate things. All of these and the forces which are at work in and among them, as well as the laws which regulate these, constitute Nature, a web of infinite complexity. It is impossible to obtain a true knowledge of any one of the groups of things, such as plants, if all the threads are cut which bind them so closely both to animals and minerals. There is even more wrong done by separating plants from animals than if they are studied apart from minerals; for not only are animals and plants intimately dependent on each other, but there is so much likeness between them—are they not both living? What life is, we cannot say. We only know its presence by certain phenomena, *e.g.*, breathing, feeding, moving. Do they not both show these phenomena? Is not life the essential part of every animal and plant? Is not life, therefore, the greatest common factor of both? Is it of such importance whether this mysterious thing, life, wears the garb of an oak tree, or of a squirrel playing in its branches? Is there not just as great a difference in the intensity of aliveness between the fixed sea-anemone, letting its tentacles be moved by the ripples playing over it, and the feverish sea-gull in its restless flight over the waves? Is it not one of our educational principles to let the little ones become acquainted with a large and varied number of individual cases, noticing the relationship of one to another, so that they get a bird's-eye view of the field, before we proceed to abstraction and classification? Yet do we not make the mistake straight away, in our most precious lessons, of marking off the living things into classes and sub-classes, and raising a broad and high stone wall of difference between life asleep and life awake?

I will draw up a series of connected lessons, then, for each term, or half-term. The materials for these lessons I would take from the animal, mineral, and vegetable worlds. The purpose of the lessons shall be to lay the foundation of a naturalist's education, whether the foundation is ever to be built upon or not. My desire shall be to give to the little ones an impulse to that joyousness of observation which makes one groan with satisfaction at the sight of a pool of wriggling black tadpoles; which makes one suppress a sigh of gladness—because all is so still—in a dark forest of pines, with red glowing toadstools on the needle-strewn ground. My aim shall be that my little ones shall love all things living, that there shall grow a feeling of fellowship, sympathy and tolerance towards all Life's children.

It would take too long to sketch a syllabus of Nature-lessons for a year, but I cannot abstain from giving a specimen-plan of lessons for a term:

Syllabus for Nature-Lessons. Spring Term.

Introduction. Walk to a wood.

Fruits and seeds scattered by the wind and lying on the moist ground.

Fallen leaves in various stages of decay. (Note what part resists decay longest, and prepare skeleton leaves and leaf impressions.)

Work of toadstools; moulds; possibly bacteria in decay of leaves.

Work of earthworms. Leaf-mould compared with sand, clay, &c. (This may be done experimentally.)

Bare twigs from which the leaves fell; discovery of bark, leaf-scars, buds.

Several lessons on buds and their means of protection against cold, wet, and animals.

Several lessons on bark and its inhabitants.

Awakening buds on the twigs, and seeds in a similar state on the ground.

Having stated my objection to purely botanical studies for the little ones, I will now make a few remarks on the botanical part of any Nature-lesson, or course of lessons. That the study of plants is suitable matter wherewith to fill the space of the science-lesson in the time-table has long been recognised. The material is cheap. No special room and no elaborate apparatus are wanted. The conscience is not burdened with a sense of wrong-doing when plants are reared in pots, as it is, or ought to be, when animals are reared in pots; nor need there be any compunction when dead plants are shown to the children, nor have plants the demoralising habit of feeding upon each other—at least, they don't do it so openly.

Botany-lessons still hold their own among the little ones, clever and dull alike, though among the older pupils they tend to become a blissful refuge for the destitute, whose limited intellectual capacities prevent them from following a course of experimental science. I will stay with the little ones.

I would like to point out some reasons why the study of plants is particularly suitable for little children. The training of the power of observation comes first and foremost—the necessity of developing this power is obvious. Further, there is opportunity given for such mental processes as comparison, classification, reasoning. The hand is trained in neatness and cleverness as specimens are dissected and mounted. It is a well-known fact that attention stands in closest relation to intellectual processes, and is essential to intellectual development. We also know that attention depends largely upon strength of stimulus, either external or internal. External stimulus—interest—results in reflex, or at least non-voluntary, attention. This is the earlier form of attention, and therefore involves less effort while gradually leading on to voluntary attention.

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[1] A paper read at the Conference of Science Teachers, January, 1900.

Flowers give pleasure and excite interest. This, I may say, is true with all children at a very early stage. If flowers are therefore chosen as material for a lesson, attention is at once obtained without any effort, and the energy so saved may be utilised for other parts of the lesson. Why children are attracted by flowers is not difficult to realise. Flowers have bright colours, are soft to touch, have delicate scents, and are suitable objects for that caressing tenderness for anything small, fragile, helpless, so characteristic of little girls and boys alike. We thus get the beginning of true æsthetic enjoyment, perhaps a vague unconscious recognition of the harmony of form and colour in all normal organisms. I notice the same sympathy towards young and growing things, such as germinating seeds, unfolding buds, kissed pink by the first beams of spring sunshine. This feeling we suppress in no way, only watch over it carefully that it may not degenerate into weak sentimentality. The danger varies in extent with the different children, and is largely due to vivid imagination, leading to a form of personification.

The very fact that there is so much scope for the imagination in the contemplation of the wonders and beauty of objects of nature gives a further educational value to the study of green things. Botany is a science—exact observation must be one of its characteristics; hence the flights of fancy are continually guided and directed by realities, and the imagination receives its necessary training. Botany is a science—keen observation must characterise it. But must we turn a blind eye to all plain and evident opportunities for giving our little ones a taste of the delights of both literature and art? I ask your opinion. Careful observation is followed by verbal description—a lesson in language! Do not the poets supply us with symbols of which we appreciate not only the form but also the life and meaning because of our nature-knowledge and nature-passion?

Yet again, the best test for observation is drawing; hence the enormous importance of continual practice in drawing in connection with Nature-lessons. At first all children love drawing. In the higher forms it occasionally occurs to one or other of the children that she cannot draw; such declarations must be nipped in the bud. There is a kind of drawing, a kind of pictorial representation, which all who will can produce, and it is the duty of teachers—by laws of persuasion, expectation, suggestion, faith healing—to convince the children that they *can* draw, and they *do* draw, we find. By noting the shape and colour of the flowers and expressing these on paper in terms of lines and washes of paint, a delight in beauty of form and colour surely grows—an appreciation of art.

A word, in conclusion, about the preparation of the teacher for such lessons. The lessons require a constant preparation, right through term and holiday. Only those who love the preparation can hold out. It means being on the look-out constantly; it means collecting treasures of specimens; it means much thought. I would wish every teacher of Nature-lessons a calm, contented mind. If we have the privilege to live in a grand city, we will not pine for the country because we might get still more specimens there. Do we not find more than we want here? Men cut the trees along the roads, and the twigs are at our disposal. The big gardens have big rubbish heaps consisting of botanical specimens. The wind blows fruit and seeds from the tall trees. So that even the like of us can reach them; they may be had for the stooping. It is but a Saturday's walk, but a bicycle ride, to the open fields and hedge-rows round London. We may come home muddy and happy, loaded with good things. If on such occasions you want to do a good deed, take some of the little ones with you. If the purpose of the expedition is to amass wealth, take some of the big girls with you. If your last lesson was but a trifle dull, if you are but a trifle worn with the heat of the day, go alone.

We may always count on the goodwill of the children and parents. Who has not experienced a feeling akin to that associated with birthdays and Christmas-time, when, after a half-term holiday, the children bring their offerings? "I have collected these for you." "Mother sends you these seeds." "Father thought you would like a dead rat?" "Grannie said you would find this book useful, she had it when she was young." Such remarks sound like music in our ears!

That it is essential, especially with the little ones, to have the *real* things and as little as possible of *verbal* description, models or pictures, is too well known a fact to be spoken of here. Similarly, text-books on any branch of science should not be seen in the class-rooms of the youngest. Still, it seems to me, illustrations are sometimes useful. (1) If the natural history of any particular place, at any particular time of the year, is studied and an expedition to the place is out of the question, a picture is a great help by way of *introduction*. (2) To show the natural surroundings of any plant or animal. (3) In the course of lessons I find it necessary to draw on the blackboard or brown paper, with the constant help and criticism of the children. (4) At the *end of a set* of lessons, when the children work out the illustrations they have made into classification tables, *e.g.*, fruit charts, I like to do the same work at the same time, and in the end we have an exhibition and criticism, and my drawings are a further stimulus to my children, and to me they are a summary and record of work done.

HIGHER EDUCATION IN SCOTLAND.

In the beginning of 1898, the Educational Institute of Scotland appointed a commission to obtain a copious and authoritative body of evidence regarding the conditions under which secondary education in Scotland is carried on. To ensure the collection of facts and opinions, an admirable schedule of questions was drawn up and issued to all parties who were in a position to speak with knowledge and authority on the points at issue. In addition, the commission held several meetings at suitable centres throughout the country, at which secondary teachers, governors of secondary schools, and others, gave information regarding the condition of higher education in their respective districts.

From these two kinds of inquiry—the schedule and the commission meetings—a large body of evidence has been obtained, and has just been issued to the public in a bulky volume of 400 pages. The Institute has shown courage and enterprise in undertaking such a work, which cannot but prove of great value in shaping the character of the promised Secondary Education Bill for Scotland. Like all commission reports, this is essentially a *rudis indigestaque moles*, but a very complete index and an excellent summary of the evidence serve effectually to bring order out of the confusion. Higher education, according to the Report, is in a state of chaos, for it is governed and conditioned by Acts of Parliament, Departmental Minutes and local regulations, often admirable in themselves, but frequently of absolutely conflicting tendency. Dr. Dickie, Kilmarnock, states, for instance, that the revenues of his school are drawn from *seven* different sources, each of which insists upon the fulfilment of its own special regulations before handing over a penny of money.

Interesting evidence on many points relating to the position and progress of secondary education in Scotland is contained in the Report. The following abridgment of the summary shows the chief results of the inquiry. The general conclusions form the weakest part of the Report; they are so general and vague as to be of little practical value.

The Recognised Secondary Schools.

The most salient result of the Institute's investigations was the practically unanimous opinion that the Secondary Schools of Scotland can only do the educational work of the country in a very limited measure. The physical peculiarities of the country render it impossible to plant such schools outside of populous centres with any hope of success. The funds at their disposal are, as a rule, inadequate to the work expected of them, even in the large towns. In country districts it would be impossible to maintain them without such aid from the rates as Parliament is not likely to sanction; and even if established, their attendance would be so meagre that, under any system of Imperial grants, they could not possibly maintain a healthy existence. So strongly was that everywhere felt that the idea of a rural secondary school was hardly in any case seriously entertained. There was, however, a very general consensus of opinion that secondary schools suitably situated should be more generously treated than in the past. Even if their fees practically closed their doors to the children of working-class parents, they nevertheless provided for the children of a class that very largely contribute to the cost of education, and are therefore entitled to consideration. It is sometimes supposed that there is a feeling of hostility on the part of many to the secondary schools, because they are in a measure exclusive. There was undoubtedly a strong opinion everywhere that means of access to all schools supported by public funds should be provided for deserving children in whatever rank of life. But the committee met with nothing but a kindly feeling to the secondary schools as such.

Higher Departments in Ordinary Schools.

In Scotland higher education must always be imparted, in a large measure, in the ordinary public schools. The sparseness of the population renders it impossible to place secondary schools within reach of thousands of children; and it is a mistake to assume that bursaries are available in all these cases. Bursaries are very unevenly distributed; and, as a rule, they are most plentiful where the existence of secondary schools might be supposed to render them least necessary. Over wide areas there are practically none; and there the children are dependent on the ordinary public schools for whatever measure of higher education they may desire or obtain. Ordinary schools with higher departments must be established in sufficient numbers to place an advanced education within the reach of all pupils over twelve years of age. In no other way can the needs of rural districts be met.

The Co-ordination of Primary and Secondary Instruction.

One of the most serious defects in the organisation of secondary education is the want of co-ordination between the curricula of the primary and secondary schools or departments. At almost every centre the evidence showed that transference from the one type of school to the other often interrupted the educational progress of pupils. On account of their deficiency in some particular subject, they were classified below their general attainments, and thus kept marking time; or they were subjected to undue pressure in order to bring them abreast of the average work of their class. The work of the secondary school was thus found to be unpleasant or unprofitable; it was either too hard or, to a large degree, a repetition instead of an extension of the instruction already received in the primary school. In populous districts, with secondary schools within easy reach, this difficulty could be anticipated by the centralisation of pupils at an age when the study of secondary subjects is generally begun: in rural districts, however, the only practical remedy is the co-ordination of the curricula of the primary schools and the secondary schools to which pupils are likely to be transferred. In some districts this has already been realised. It can hardly be expected, however, that, under the present system of management, such co-operation can be secured in every district, and it is felt that this alone is a most urgent reason for the creation of wider areas of administration.

Bursaries.

There was found great variety of opinion in regard to school bursaries. It was made abundantly plain to the committee that the bursary system now in operation does not give general satisfaction. Teachers complain that they take away their pupils just at the time when they are beginning to give a scholarly tone to their schools. Parents complain that, in spite of all restrictions, those who are in a position to pay for special training have the best chance of success in the competition. The pupils complain that when transferred to higher schools by means of bursaries they are drafted into classes much lower than those they left, on the ground that in some particular subject—Latin, as a rule—they are backward. They are forced to work with pupils often much behind them in everything else.

The criticisms made upon the bursary system may be summarised thus:—(1) Bursaries were often granted to pupils whose circumstances did not require such aid; (2) they depleted the upper classes of certain schools, without securing any apparent advantage to the pupils transferred; (3) in rural districts the smaller bursaries were inadequate for the maintenance of pupils who had to board at a secondary centre, and were often not claimed; (4) they were unevenly distributed, being most numerous in the populous centres, where they were least needed.

In the opinion of the Commission none of these objections is a condemnation of the bursary system as such. The Commission is convinced that a wisely-managed bursary system is a necessary adjunct to any scheme of secondary education that has for its object the training of the most talented of our poorer children, and to securing for them, as far as possible, equal opportunites for advancement in life. And in districts where no local endowments were available as bursary funds, the hope was expressed that the Treasury would recognise the necessity for an Imperal grant to meet the needs of special districts—a principle it has already conceded in its treatment of elementary education in the Highland counties.

Different Branches of Study.

It has been made abundantly evident that classics still maintain, if not exactly their old place of importance in the higher schools, at least a very important place; and the Commission did not meet with any general feeling of hostility to their supremacy. The value of Latin and Greek, in connection with the professions, was fully recognised; and their influence, as instruments of culture, was not questioned. But there was a feeling on the part of many that modern languages, especially French and German, were not treated with the same favour as Latin and Greek, in school or college. They had not the same rank as academic subjects of study. They counted for less in competitions for academic honours and emoluments. In short, those preparing for the learned professions had an unfair advantage over those whose success in life would depend more on modern than on ancient languages. It is satisfactory, however, to note that the Commission found everywhere an increasing appreciation of French and German as subjects of study. But not on mere classic lines. Here, again, the utilitarian aspect of education was rather pronounced. These languages are desired for practical ends. The power of using them for ordinary linguistic purposes is desired by a rapidly-increasing number of lads destined for commercial careers; and while grammar and philology, as aids to that end, are not objected to, there is strong objection to them as the main objects of the teaching. The speediest method of enabling the student to do business in the Continental markets should be the object of study in the majority of cases.

Management.

On the question of management there was practical unanimity. One controlling body for all grades and classes of schools was felt to be the only means of reducing the evil of over-lapping and other evils leading to dissipation of educational effort. Education is a homogeneous whole, and cannot be divided into separate and distinct sections. One strong controlling body would have no temptation to encourage the usurpation of work by one class of schools that properly belonged to another; and it could suit its division of labour to the particuliar circumstances of its locality, and vary them to suit varying circumstances. Unity of management is the only safeguard against dissipation of effort. No doubt that would involve extension of managerial areas in rural localities, or such combinations of small School Boards as might be necessary for the control of particular schools common to two or more School Board areas. That, however, should present no difficulty. The principle of unity is beginning to be recognised as the only means of effectually meeting the educational needs of the future; and when one authority controls and guides all the educational work of a district, it will be well and economically done.

Managing Bodies.

Assuming the continuance of separate managing bodies, the Commission found a diversity of opinion on the question of their constitution. Many favoured the principle of forming boards of management for higher education of representatives from various local bodies interested more or less in the work of education. Others believed that managers elected by the ratepayers *ad hoc* would alone satisfy the requirements of the work. A third section favoured the County Councils as the educational authorities in rural districts, and the Town Councils as the authorities in the burghs. The *ad hoc* authority was undoubtedly the one most favoured, assuming it to have the control of all schools; and even as a separate authority for the management of high schools, it had the largest number of supporters. The system of selection of managers adopted in connection with the county, and burgh, committees on higher education was not regarded with much favour. The County and Burgh Councils, as directly representing the ratepayers, were more in favour than the committees composed of representatives from other local bodies. But a school committee, responsible for the whole education of a county or other large and suitable area, was generally regarded as the best solution of the problem of management.

Legislation.

It is not too much to say that there is but one opinion in Scotland about the necessity for immediate legislation to co-ordinate and harmonise the various educational agencies now at work, and to put an end to the confusion which is more or less apparent in every department of the work. Legislation by minute may tide over temporary difficulties. But it can never take the place of legislative enactment. The country has out-grown "hand-to-mouth" educational provisions; and it is difficult to see how their existence can any longer be justified. The wisdom of much of the work of Dover House cannot be questioned. In Sir Henry Craik the Education Department has a permanent head who is not only an invaluable public servant, but who is an honour to Scotland. In Lord Balfour of Burleigh Scotland has a Secretary of State who is making for himself a great and lasting reputation, and that not least as an educationist. But that does not affect the pressing necessity for legislation; and probably there are none more convinced of that necessity than Lord Balfour and Sir Henry Craik. Evidence was everywhere found of the need for a comprehensive reconstruction, under a single comprehensive management, of all the agencies now at work; and the Educational Institute is convinced that the most pressing requirement of the day is a great Education Act such as Lord Balfour and Sir Henry Craik might be trusted to construct with the aid of Parliament.

ITEMS OF INTEREST.

GENERAL.

WE publish this month the second of our promised series of Notes for Lantern Lectures The historical subject selected for treatment has other interests besides those specified in the authors' introduction. Their notes on the "beginnings of English colonisation" should be found especially useful by teachers preparing classes for the Cambridge Local Examination, 1900 for which the special period of English History prescribed is 1509-1688--and for the Queen's Scholarship Examination (Education Department), 1900, for which the special subject in history is the "Expansion of the British Empire." Those who are interested in the most picturesque episode in the story—the foundation of New England by the Pilgrim Fathers—will find some helpful suggestions in a little book, which the modesty of the author seems to have prevented him from including among the works of reference, viz., in Mr. A. Johnson Evans's "Primer of Free Church History" (Allenson, 2s. 6d.).

"WHEN, how, and where, did the Danes and Northmen settle in England?" was one of the English History questions at the London University Matriculation Examination in January. The examiners were Professors Gardiner and York Powell, each of whom has written a text-book suitable for matriculants. Their own answers to their questions supply a quaint instance of doctors disagreeing. Professor Gardiner seems to use the terms *Danes* and *Northmen* almost interchangeably, and when he does draw a distinction between them he makes the Danes a species of the genus Northmen. Professor York Powell, on the other hand, begins by stating that "the English called all their Scandinavian foes *Danes*," and goes on to distinguish sharply between the *Northmen*, who "were setting up kingdoms in Ireland, Man, the Orkneys, and York," and the *Danes*, who "were peopling and ruling half the Marchland, Lindesey, and

East England." Again, according to Professor Gardiner, the first settlement of the invaders was made by *Northmen* in *Thanet*, in *851*, while according to Professor York Powell, the first settlement was made by the *Danes* in *Sheppey*, in *855*. We hope that the two distinguished historians have not, as examiners, allowed the candidates to suffer for their own discrepancies as teachers.

At the meeting of the London School Board, held on February 1st, it was agreed to "instruct the School Management Committee to report, before the end of March, 1900, on the following resolution:" "That, as by reason of poverty so small a proportion of the children attending elementary schools in London can obtain the advantages of secondary education, it is desirable that the School Board request the Technical Education Board of the London County Council: (1) To devote a larger proportion of the funds at their disposal, for purposes of technical and secondary education, to Junior County Scholarships. (2) To reserve half the total number of Junior County Scholarships awarded for the children of parents who are in receipt of a total income of not more than two guineas per week."

At the weekly meeting of the London County Council on February 13th, the Corporate Property Committee brought up a report upon the question of the tenure of appointments by assistant teachers in secondary schools, in which they expressed the opinion that it would be greatly to the advantage of both the assistant teachers and the head-teachers that no dismissal should be effected except on the resolution of the governing body of the school, instead of allowing the headmasters or headmistresses, as was now generally the case, the sole right of appointing or dismissing the assistant teachers. They recommended that, in conference with representatives appointed by the Technical Education Board, they should be authorised to make all the necessary arrangements for a deputation to wait upon the Charity Commissioners with a view to the alteration of the conditions under which assistant teachers in secondary schools hold their appointments. The recommendation was agreed to.

Sir Michael Foster has been elected as the Parliamentary representative of the University of London, in succession to Sir John Lubbock, who has been elevated to the peerage. He obtained a substantial majority over the other two candidates, the result of the poll being, Sir Michael Foster, 1,271; Dr. Collins, 863: Mr. Busk, 586. Now that the contest is over, even his opponents acknowledge that Sir Michael Foster will add lustre to the University by his presence in the House of Commons. For the first time in the history of the University, the graduates have returned one of themselves, and one who is, moreover, not only in sympathy with their interests, but whose views will be given careful consideration by influential politicians. He will labour in the House of Commons, as he remarked in a speech made after the declaration of the poll, "not for the interests of any particular class of the University, be they doctors or lawyers, men of letters, men of science, or men of business, internal or external students, teachers or taught, men or women, but for the common good of all." Sir Michael Foster's performances are likely to be equal to his promises, and the best interests of the University may be safely entrusted to his charge.

We learn from *The Times* that Mr. D. R. Fearon, secretary to the Charity Commissioners, has been added to the departmental committee on the Board of Education; and, at the same time, the scope of the inquiry has been enlarged by the following Order in Council signed by the Lord President:—"The committee will have regard, in their recommendations, to the provisions of the Board of Education Act relating to secondary schools and the undertaking of the Government to establish a third branch of the Education Office to deal therewith."

In reply to a question asked by Mr. Yerburgh in the House of Commons on February 13th, Sir John Gorst said the Committee of Council consider the proposal of the Bishop of Chester, to inscribe upon the walls of our public elementary schools the names and record of their old scholars who have distinguished themselves by acts of heroism and self-sacrifice, or have earned in other ways a high place in their country's regard, a most excellent one, and will encourage its adoption by the managers of elementary schools.

A circular, signed by Sir Henry Craik, has been issued to school boards and managers of schools by the Scotch Education Department directing attention to the value and importance of physical education. The subjects herein touched upon are worthy of the most careful attention of school authorities. To quote one paragraph from the circular:—"Lord Balfour is convinced that such [physical] exercises, apart from any other consideration, would be a most important aid in attaining some substantial objects at which all education must aim. Not only do they tend to improve manual dexterity and to render more alert the faculties of observation, but they are also pre-eminently useful in developing those habits of comradeship, of responsibility and of individual resource, which are of supreme importance, not only to the nation as a whole, but to the individual pupil. Indirectly they bring the individual into contact with the principles which lie at the foundation of national defence, and they bring home to him his duties and responsibilities as a citizen of the Empire, while at the same time giving him an opportunity of strengthening and developing his physical powers, and rendering him more fit for his ordinary employment. Whatever form the military service of our country may hereafter assume, it is evident that the strength and security of the Empire as a whole, as well as that of every individual citizen, must depend upon the extent to which the moral elements of responsibility, duty and readiness of judgment, along with the physical capacities, may be developed. Success in this can only be achieved by careful consideration of the best methods, and by employing these strenuously and zealously during school life. Attention to the physical training becomes all the more urgent owing to the tendency of population to gather to the larger towns, where the opportunities for physical exercises are necessarily restricted."

In the course of his inaugural address, Mr. H. L. Withers, the newly appointed Professor of Education at Owens College, Manchester, said it was intended so to organise the training of teachers for secondary schools that the peculiar problems of the work in such schools would be attacked from the first. In doing this they would be obliged to rely upon the active help of the head masters and head mistresses of the secondary schools in Manchester and its neighbourhood. Another function of the department would be to act as an intelligence department for the teachers of the district. For this purpose several things would be required: a library containing the best books and magazines—English, American, and Continental, together with reports from students and observers abroad; a museum, containing time-tables, schemes of work, and the general machinery of a school; a demonstration room or theatre, in which lessons could be given, and subsequently criticised and discussed by students and teachers; and one or more schools in connection with the department to illustrate in actual operation the approved principles of organisation and teaching.

In connection with the University Extension Summer Meeting this year at Cambridge a series of lectures will be delivered on "The Educational Advances of the Century," including such topics as the following:—(1) The teaching of the very young—the Kindergarten system, (2) the physical education of children, (3) manual training and drawing, (4) science teaching in schools, (5) the development of girls' education—high schools for girls, (6) the teaching of deaf and defective children. There will also be arranged a special Training Course for Teachers in Geography, with the object of improving the instruction in this branch of study. In view of the fact that the Physical Geography Schedule in the Cambridge Senior and Junior Local Examinations has been reorganised, and a special course of practical work drawn up, it is hoped that this geographical course will prove of great value to teachers in secondary schools.

THE next examination for English "*répétitrices*" in French training colleges will be held in London during Easter week. The *répétitrices* pay £16 (400 francs) for the school year, and give a little assistance in the teaching of English. In return they receive board and lodging, and are allowed to attend all the classes held at the college. The training colleges are all under the direct control of the Ministry of Public Instruction. Successful candidates will be required to enter the colleges on October 1st. For further particulars apply to Miss Alice Gardner, Newnham College, Cambridge, or to Miss Williams, Franco-English Guild, 6, rue de la Sorbonne, Paris.

THE Berks County Council will offer in June next an Intermediate Scholarship of the annual value of £50, tenable for three years, either at the Reading School, or at Roysse's School, Abingdon. Candidates must be males between the ages of 15 and 17 on May 1st, 1900, and their parents or guardians must have been for the last three years resident in the Administrative County of Berks. The candidates must have attended by May 1st, 1900, a school, either in the Administrative County of Berks, or in the County Borough of Reading, for the last two years continuously. A certificate to this effect, accompanied by a testimonial of good conduct from the headmaster of his present school, or such reference as will satisfy the Committee, must be sent, with an entry form (which may be obtained on application), filled up and signed, before 1st May, 1900, to the Organising Secretary, Mr. G. J. Hill, 30, The Forbury, Reading.

OUT of a total of 272 scholarships awarded during the years 1891 to 1899 by the Manchester Corporation Technical Instruction Committee, forty-two were gained by scholars of the Technical School, forty four by scholars from Manchester and Hulme Grammar Schools and other secondary schools, seventeen from the School of Art, twelve from elementary schools, and 131 by scholars from higher grade schools, while in the remaining seventeen cases the school of the successful candidate is not stated.

THE recent deputation from the Agricultural Education Committee, which waited upon the Duke of Devonshire, at the Education Department, made it quite clear what steps the important body they represented consider necessary with a view to making the instruction in rural schools really beneficial to the children in country districts. The education imparted in the primary schools of purely agricultural districts is not precisely what is needed. What is wanted is an extension of the provision with regard to object lessons in the lower standards, so that they may be continued throughout all the standards in elementary rural schools. No radical changes are asked for, but the desirability of concentrating in the hands of one department the control of agricultural and rural education is earnestly sought, as well as a differentiation of the curricula in town and country schools. In the course of a sympathetic reply the Duke of Devonshire enumerated the considerations, in the directions indicated by the deputation, which were already before the Education Department, and pointed out the desirability of creating a strong and healthy opinion among the classes interested in this great reform.

THE rule adopted by the Court of Victoria University, providing for a leaving examination for grammar and other secondary schools, and the reasons for the scheme, may be thus summed up:—One of the great deficiencies of our educational system has always been the isolation of its component parts. Every measure which helps to knit up the scattered strands of educational effort is to be welcomed. The resolution adopted by the University Court provides that boys who are leaving the grammar schools may take such an examination as that which they would have to pass on matriculating at the university, and that the one examination shall suffice instead of two. The scheme has been thrice considered before adoption—by the university authorities separately, by the headmasters separately, and by a joint committee of the two. It should, therefore, be generally adopted by the authorities of secondary schools in Lancashire and Yorkshire, and the immediate result will doubtless be a perceptible increase in the number of undergraduates at the Victoria University.

THAT the Board of Education Act comes into operation on the 1st of April next is excuse enough, if indeed excuse were needed, for Dr. R. P. Scott's valuable contribution to *The Fortnightly Review* for February. Dr. Scott has worked so hard for the interests of English secondary education, and is held in such high esteem by all who are actively engaged in educational work, that it would have been impossible to select a more fitting and generally acceptable exponent of the claims of secondary education to national recognition. We cordially recommend those of our readers who have not yet studied Dr. Scott's article on "The New Education Office and the Interests of the Empire" to take the earliest opportunity of doing so.

DR. SCOTT very rightly maintains that if wisely administered the Board of Education Act will prove a great Act, but that the most difficult and delicate task of all remains, namely, the construction of the machinery which is to carry the law into operation. Among the reforms which the new Act will make possible will be the "gradual diffusion of a higher standard of intellectual efficiency throughout the now less favoured schools;" "the gradual results of something like a staff-college training in raising the professional proficiency of the teachers;" "the extension throughout the day secondary schools of the public-school spirit of manly self-reliance and corporate honour which has made the finest type of English education the envy of the world." We regret that considerations of space make it impossible to quote largely from this paper. But we cannot refrain from referring to a few of Dr. Scott's happy expressions. He speaks of the Act as "the greatest common measure of educational agreement to date." One of the first things we need is "an Educational Domesday Book for the year 1900." But there are many others, and teachers must read the article for themselves.

THE results of an elaborate inquiry undertaken by the National Association for the Promotion of Technical and Secondary Education, which are published in an article in the current number of *The Record*, are of the greatest value. The article sets forth in detail some of the results connected with the efforts made by County and County Borough Councils to improve the local supply of secondary education. The information covers a period of ten years and relates to the establishment of new secondary schools, and to the extension and adaptation of existing secondary schools for the purposes of technical education. Many other instructive particulars are given respecting (*a*) the increase in the number of pupils receiving secondary education, and the influence of the county scholarship schemes in this connection, (*b*) the supply of additional science and technical teachers, (*c*) the assistance rendered to girls' secondary schools, (*d*) the extent to which the buildings of secondary schools are utilised for evening classes under the control of local authorities, (*e*) the relations of County Councils to proprietary and private schools.

THE facts revealed by the inquiry go to show, says *The Record*, that in England alone, since 1889, 81 new public secondary schools have been established, while 215 existing schools have been extended mainly for the purposes of science teaching. As regards the schools in the latter category, the extensions to 195 of them have resulted in the addition of 251 physical and chemical laboratories, 77 workshops for manual training, 76 lecture rooms, and 50 class-rooms. The total sum of money involved by these developments is £764,449. Of this sum, local authorities have voted an amount of £147,496, the rating and borrowing powers of the Technical Instruction Acts being utilised to raise £20,707 and the Residue Grant supplying the remainder.

IN a profusely illustrated article in the same journal, two examples of the organisation of individual secondary schools demonstrate the excellent manner in which some County Councils are bringing existing schools into line with modern requirements. The two schools described, in each case by the headmaster, are King Alfred's School, Wantage, and Lady Manners' School, Bakewell. The experiences in the former case show that it is possible to provide, at a comparatively small cost, a small rural district with a school capable of giving the boys of the neighbourhood a suitable education, and also of acting as a centre from which technical and scientific education may be diffused throughout the surrounding country. The actual expenditure in the case of King Alfred's School, Wantage, is given by the headmaster, Mr. Frank Sherville, M.A., as follows:—

Building (including gas and water fittings)...	£1,104	11	0
Fittings for laboratories, lecture room, and art school......	213	1	7
Benches and fittings for manual instruction	35	13	6
Permanent apparatus for laboratories	121	4	4
Tools for manual instruction	21	19	0
	£1,496	9	5

PHYSICAL LABORATORY OF KING ALFRED'S SCHOOL, WANTAGE.
(*From the Record of Technical and Secondary Education*.)

LADY MANNERS' School, Bakewell, affords a striking experiment in co-education. It is probably the largest secondary school, strictly so-called, devoted to co-education, and its rapid success during the three years it has been opened under its present scheme is a strong argument in favour of the system adopted. The headmaster, Mr. C. J. Mansford, B.A., says:—"The ideal scholar will enter the school at the age of eight years. For several years he or she will receive a good general grounding in such subjects as the scheme provides for; after this, a two years' course in the elementary stage of the School of Science, followed by a one year's course in the advanced stage, if not two years. Emerging from the School of Science the scholar will prepare to matriculate at London University, for open scholarships, &c., and, at the age of 18 years, be considered fit to pass out into the world or to a university or to enter a technical institution. During the scholar's progress through the School of Science the literary portion of work corresponds to the Cambridge University Preliminary, the Junior, and, in the third year, the Senior Local Examination."

IN an interesting paper in the February *National Review*, Miss Catherine Dodd considers school children's ideals. The following questions were proposed early in December, 1899, to three hundred and two boys and two hundred and eighty-nine girls in public elementary schools: (1) "Which would you rather be when you grow up, a man or a woman, and why?" (2) "What man or woman of whom you have ever heard or read would you most wish to be, and why?" After studying the answers, Miss Dodd is led to the conclusion that English school children are not lacking in public spirit, although their range of heroes is extremely limited. Although the capacity for hero-worship is strong in both boys and girls, yet the latter have a more delicate appreciation of what is noble in human character.

M. LEOPOLD ROTHSCHILD has undertaken to establish a prize in King's College School for the encouragement of the study of French and German. This may be regarded, says the *Athenæum*, as one of many indications of the increased usefulness and prosperity of the school since its migration from the Strand to its present home at Wimbledon.

ONE of the illustrations forming the supplement to *The Builder* of February 10th represents the garden front of the examination theatre of the Ladies' College, Cheltenham, which was designed by Mr. E. R. Robson, of Westminster. In the journal itself two plans, drawn to scale, of the ground floor and first gallery of the theatre are provided. These drawings give an excellent idea of some of the most recent additions to this college, the growth of which, under the direction of Miss Dorothea Beale, has been so phenomenal. Although originally started in 1854, the great development of the Ladies' College at Cheltenham really dates from the year 1858, when, with sixty pupils, it came under the control of the present lady principal, soon after which new buildings had to be thought of. In the interval of forty-two years the pupils of all ages have increased till their number verges upon 900, and the college is probably now the largest and most successful organisation in the world for the training and education of girls.

At a Congregation of Cambridge University, held on February 15th, the proposal of the Special Board for Mathematics, that the list of successful candidates in Part I. of the Mathematical Tripos should be arranged in three classes, each class to consist of not more than two divisions, and the names in each division to be arranged alphabetically, was rejected. We shall thus continue to have Senior Wranglers.

THE issue of *Literature* for February 10th is an educational number in more ways than one. Not only are there nearly ten pages of short reviews of recent school-books, but the leading article is on "Education and War," and three other articles deal with educational subjects. The headmaster of Felsted describes the advantages derived from the inspection of secondary schools, while of the two unsigned contributions one is concerned with the Board of Education Act and the other with the recent English Education Exhibition.

MESSRS. JOHN J. GRIFFIN & SONS have just issued a new catalogue containing sets of apparatus and materials for working through the following text-books of science:—"Elementary General Science," by A. T. Simmons and L. M. Jones; "Exercises in Practical Physics," Part I., by R. A. Gregory and A. T. Simmons, and "Elementary Practical Physics," by W. Watson.

FROM ABROAD.

THE School of Oriental Languages in the University of Berlin appears to have had an unprecedented success this winter. According to the Berlin correspondent of the *Standard*, the number of students, including one female teacher, amounts to 186, against 118 in the previous half year, 8 of them being foreigners. The professions are represented as follows: there are 102 jurists, of whom 62 are preparing for interpreterships, 4 having already passed the examination; 35 are teachers or members of the philosophic faculty; 25 are business men, officials, or private persons; 14 are officers; 3 medical men, 5 theological students, and 2 are students of technical science. The attendance at the various classes is as follows: Russian 34, Arabic 32, Chinese 27, Suaheli 26, Turkish 25, modern Greek and Persian 9 each, Japanese 8, Guzerati 5, Hindostani 2, other languages 6. The non-official course for business men is attended by 103 foreigners, who are studying Russian.

THERE were in all 3,325 candidates for the last Bombay University Matriculation examination from different centres, such as Bombay, Poona, Ahmedabad, Belgaum, Amraoti and Karachi, out of whom 1,008 passed.

THE late Dr. von Mevissen, Councillor of Commerce and honorary citizen of Cologne, has, we learn from *The Chamber of Commerce Journal*, bequeathed about 700,000 marks in cash and real property valued at 400,000 marks to the city of Cologne for the erection of an Academy of Commerce, on the condition that the money is allowed to increase at compound interest until it reaches the sum of a million. The income derived will then be devoted to the Academy. Thus the city of Cologne, which was the first Prussian town to erect a school of commerce, will also be the first to get an academy of commerce. The donor published, in the year 1879, a treatise on the objects and motives of the new institution.

ACCORDING to the same authority, commercial men in Germany do not approve of the creation of teaching establishments, on purely university lines, for the merchant and specially for the exporter, whilst the Commercial High School at Leipzic, which is now to be followed by a similar establishment at Frankfort, is not very highly regarded by practical men. On the other hand, there is a desire for the special preparation of officials and merchants for the colonial service and for the peculiar claims of tropical economic life. As regards the acquisition of languages, a splendid opportunity has been presented by the extension of the Oriental Seminary at Berlin, where special lectures have also been given on geographical, botanical and other sciences, in order to acquaint would-be colonial officials with the spheres of their activity.

WELSH.

IT is but a short time ago that Lord Rendel gave about £500 towards the building fund of the Aberystwyth County School. He has now announced his intention to devote £250 a year towards intermediate education in the counties of Cardigan, Montgomery, and Merioneth.

IT has been suggested that a Welsh County School Cadet Corps should be organised. The idea was started in Carmarthenshire, and the names of Lady Hills-Johnes and Sir Lewis Morris were connected with it. Nevertheless, the movement has received but little encouragement. Miss E. P. Hughes, late Principal of the Cambridge Women's Training College, has addressed to the press an impassioned protest. She maintains "that we should preserve our character for sober common sense, and not be carried oft our feet by a wave either of fright or ill-considered enthusiasm." "Let us preach the ethics of citzenship as eloquently as possible . . . but that last terrible resort to arms should surely be taught only to adults, and not children." "By all means," she continues, "let every man between twenty and fifty make himself an efficient volunteer. By all means let every woman between twenty and fifty make herself an efficient nurse." And if ever the time comes for the question to be raised whether children should make their contribution, "we teachers shall have a right to be heard. We are experts, or ought to be, and I hope we shall all stand firmly to this principle; it is we who must decide how best to develop our children physically, mentally, and morally."

ONE improvement leads to another. No sooner were the three University Colleges in full working order than it was seen that the students who entered were quite unprepared for university teaching. They had received no adequate secondary training. This led to an agitation for the establishment of a system of secondary schools. In due time they arrived. They in turn felt that the elementary schools were understaffed, and that the headmasters were sadly overworked. The work, which should have been entrusted to qualified assistants, was relegated to young pupil teachers, who, after their day's teaching, wasted their own strength and that of their headmasters in preparation for the examinations of the Education Department and the Queen's Scholarship. Hence there has sprung up a very general movement in favour of the education of the pupil teachers at the County Schools. Schemes have been submitted to and by several County Governing Bodies with this object in view. It is proposed that the Elementary School Managers shall hold examinations for the selection of pupil-teacher probationers, that these probationers shall proceed to the County Schools and remain under instruction there for three years, their school fees being paid by the Elementary School Managers. At the end of the second year the probationers shall present themselves for the Junior Leaving Certificate Examination, and at the end of the third year for Matriculation or the Senior Certificate. At the end of this period they shall enter upon a two years' engagement as pupil teachers, and prepare for the Queen's Scholarship Examination under the guidance of their head teachers or of masters of method attached to the County Schools. Some such scheme will probably be accepted by several counties in the course of the next few months, and the effect of such a change will perhaps be more far-reaching than is generally expected. It will undoubtedly tend to bring primary and secondary schools under the same control—a consummation not only inevitable, but already looked forward to by Welsh educationists.

The Cardiff Cymmrodorion Society has memorialised the University, Intermediate, and School Board authorities in favour of including Welsh history as a subject in their curricula.

SCOTTISH.

Last month's notes included the petition of the Scottish Modern Language Association to the University Courts, praying for equality of marks for all subjects at their Preliminary and Bursary Examinations. Hitherto, students taking the classical subjects at these examinations have a handicap of 200 marks in their favour as compared with those taking modern languages. The competition for bursaries is so keen that this handicap effectively precludes the modern-language students from obtaining any bursary. It is pleasing to note that success has already crowned the efforts of the Association. Aberdeen University Court has resolved to recommend an alteration in the ordinances, whereby all candidates may be enabled to obtain the same maximum of marks. The alteration, which affects all the Scottish Universities, will require the ratification of Parliament. Success is assured if the other Universities support the action of Aberdeen.

Among the Bills promised for the present Session of Parliament is one on *Education for Scotland.* The phrasing is the cause of a good deal of speculation in educational circles in the North. A Bill on *Secondary* Education for Scotland was confidently looked for; indeed, certain officials of the Department had stated that it was in preparation during the recess. Has it been abandoned because "the time is not propitious for any domestic reforms which involve a large expenditure" (Queen's Speech)? The absence of the word Secondary is at least ominous, especially as a Bill on *Secondary and Technical Education* is promised for England and Wales. Should this view prove to be correct the disappointment to all friends of Higher Education will be intense.

The Congress address on "Commercial Education" by Mr. Harrison, Chairman of the Edinburgh Chamber of Commerce, promises to be more fruitful of results than the average Congress paper. The subject has been fully and sympathetically treated in the Edinburgh local newspapers, and the amount of correspondence it has called forth shows how much interest is being taken in it by the general public. At last meeting of the Edinburgh Merchant Company the subject was fully discussed, and a Committee was appointed to prepare a scheme of working operations.

CURRENT HISTORY.

A few days before the end of last year the Russian Government completed their trans-Siberian Railway, at least so far as their present plans are concerned. One cannot yet travel all the way in the same carriage, for there are one or two interruptions, but the journey can be made throughout by steam, and another stage is completed in the shrinkage of the habitable globe. Fifty years ago, at the period of the first Great Exhibition, when it was imagined for a time that wars were for ever at an end, and that the reign of "peaceful commerce" had begun, there was much talk about the extension of railways through Asia. The more material idea has survived, but the high hopes we entertained have evaporated. Not for peaceful commerce, but as agents of hostile powers seeking to "keep open doors" (?) in China, are rival railway schemes planned and carried out.

"The battle of Tenchebrai—1106—Conquest of Normandy by England; the battle of Hastings, in a sense, avenged." So is the schoolboy tag which rises to our minds as we read that "henceforth English is to be permitted in the Courts of Jersey." We have heard that it is a quaint joke among the Channel Islanders that Great Britain is their oldest possession. We, on this side the water, naturally think that the captured has taken possession of her conqueror. At any rate, the English-only-speaking Outlander of Jersey will now be allowed to use his native language when contending for what he regards as his right and the world has moved one step nearer to the uniformity with which we are threatened.

"Lord Salisbury does not believe in the perfection of the British constitution as an instrument for war. He does not think that the British Constitution, as at present worked, is a good fighting machine." So we have always found. Charles I. could not raise a fleet until he could persuade a Parliament to believe it was necessary, and because there were too many John Hampdens. In the wars of the 18th century we always mismanaged the first few campaigns, and had to wait for victory till a Marlborough or a Chatham had made good his position *against* Parliament, and had taught us once again that

> "Theirs not to reason why,
> Theirs but to do and die,'

who are at war. What a *fiasco* the Crimean War was! Will then the British Constitution undergo modification to fit it to *be* a "good fighting machine?" If so, Parliament must be curtailed or even suspended, and again become, what it was till modern times, a rare and desperate remedy for "*internal* application only."

Slowly the spade is teaching us the history of vanished monarchies in the East. Recently M. de Morgan has had occasion to tell of his triumphs at Susa. Layer on layer of long ago destroyed cities have been discovered on the same site; and with a clearness that seems almost incredible to those who are not familiar with such exploitation, the story of ancient times lies bare before the scientific digger. Monuments, palaces, graves, more or less preserved, are made to tell their fascinating story. The time seems not to be far distant when we shall know sufficient of these eastern kingdoms to be able to locate the Bible story in a sufficient background, and realise the ancient Israelites in a way that has hitherto been impossible.

THE RELIGIOUS AND POLITICAL LIFE OF ROME.[1]

It often happens that the reading of the works of modern historians leaves after it a certain incubus upon the mind of the reader. This feeling is very analogous to that which haunts the student who prepares for examination,—the feeling that he has to "remember" something. His own imagination has been held in check and has been confined to the point of view of the writer. It has become clouded and befogged by the various theories he has at different times read. This is the reason why such a highly-strung and impatient nature as Shelley's preferred myth to so-called history.

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[1] "The Roman Festivals of the Period of the Republic." By W. Warde Fowler, M.A. 373 pp. (Macmillan.) 6s.
"A Handbook of Greek and Roman Coins." By G. F. Hill, M.A. 295 pp. (Macmillan.) 9s.
"The Letters of Cicero." Translated into English by Evelyn S. Shuckburgh, M.A. 4 vols. Vols. I. and II. 800 pp. (George Bell & Sons. 5s. each.

In such books, however, as Mr. Warde Fowler's "Roman Festivals of the Period of the Republic," Mr. Hill's "Greek and Roman Coins," with its exquisite collotype plates, and Mr. Shuckburgh's translation of "Cicero's Letters," we have what may serve, if we like, as a mere chronicle where we may allow our imaginations to run riot and where we may form our own clear but unwritten theories of the life recorded. It is not meant by this that Mr. Fowler's admirable book is nothing but a catalogue of the festivals. The student will find here Mr. Fowler's theories clearly laid down and the theories of others discussed with judgment. But the general reader will probably detach and select those passages which give so true a picture of the inner life of the nation.

There is nothing in Mr. Fowler's book which strikes one more clearly than the attitude of the simple Roman farmer to the forces of Nature around and within him. It is the silent submission and uncomprehending obedience of the child. Thrifty and hard-working as he was, he yet saw that there were forces beyond his control, that in spite of all his labour his crops might be blighted by the frost and the mildew, that his cattle might be cut off by disease. In due time he tilled the ground and sowed the seed, carefully he tended and fed his flocks, yet he had to acknowledge that it was some power beyond him that gave the increase. To this power, then, in its various manifestations, to these "numina" he bowed. In the Robigalia he sought to avert the red-rust mildew. In the Fordicidia, the calf cut out from its mother's womb and burnt was "to procure the fertility of the corn now in the womb of mother earth." Childlike as was his submission, it yet contained a steady practical hope, a belief that his "pietas" and energy would bring their reward. To him the mystery of generation and of growth was the mystery of the universe. The fecundity of his cattle and his crops was his prosperity, the increase of his family was the security of his old age, and with true instinct he saw that the health and strength of his homestead family were the foundation of his country's greatness. Beyond this his imagination did not carry him. Such a simple "natural piety" was satisfied with little. The due observance of certain ceremonial details constituted his "religion." His deities, generally speaking, were vague abstractions. Unlike the Greek, he did not give these conceptions a definite personality, or strive to realise them in forms of art. Yet it was this very want of imagination that fitted him for that obedience and self-sacrifice for the common-weal which made Rome mistress of the world.

Slowly, however, this simple faith became, in the words of Mommsen, "ossified into theology." As Rome extended her commerce and her conquests new festivals were added to the calendar, and foreign gods found a place in her religion. "The old Italian ritual of simple apparatus and detailed ceremony" became not only more tedious, but, above all, more and more costly until, by the time of Cicero and Cæsar, there was little that might be called real religion. As Mr. Fowler remarks, "the acids of a second-hand philosophy were eating away the beliefs of the educated classes." "Temples were still built," says Froude, "with increasing splendour: the established forms were scrupulously observed; public men spoke conventionally of Providence, that they might throw on their opponents the odium of impiety. But of genuine belief that life had serious meaning there was none remaining beyond the circle of the silent, patient, ignorant multitude. The whole spiritual atmosphere was saturated with cant—cant moral, cant political, cant religious."

It is into this life, so modern, so similar in many respects to our own, that "Cicero's Letters" take us. It is its very modernity which has made it possible for Mr. Shuckburgh to give us such a brilliant translation of these Letters. So vivid is the translation that one who knows little or nothing of Roman life might take up these Letters and read them with as much absorption as if he were reading the private correspondence of a Bismarck or the confessions of a political wire-puller and office-seeker of to-day. They are the letters of perhaps the most cultivated man of letters of any age, whose appreciation of art was as keen or as assumed as our own. They are the revelations of a philosopher and politician who sought to reconcile God and Mammon, who tried to be both on the right side and on the safe: they are the pitiful confessions of one who has "no longer the power of acting either with courage or with prudence."

These three books, therefore, each in its own way, allow us to form our own ideas of the inner life of Rome. The beautiful reproductions of the coins, the detailed enumeration and descriptions of the festivals, are, in their way, though of course in a lesser degree, original documents like the Letters—and can give us a far truer idea of Rome than volumes of learned theory.

MR. FABIAN WARE ON EDUCATIONAL REFORM.[1]

No part of the work which the new Board of Education will have to do is likely to prove more difficult and more provocative of opposition than that of appraising the value of the efforts of those who have hitherto been concerned with different phases of our national education. Not that there has been any lack of expressions of opinion and offers of help from outside. But, whether as a result of a want of appreciation of the methods of science or from some other cause, the percentage of error introduced into most of these unofficial estimates, due to the personal equation, is very large. The most recent survey of what it is to be hoped will soon be the familiar field of English education is that of Mr. Fabian Ware, and its value is much diminished by the consideration that he appears to have entered upon his task with certain prepossessions. He has, moreover, made a series of statements the incorrectness of which might easily have been avoided.

A careful study of Mr. Ware's pages has led us to the conclusion that he does not altogether like higher-grade board schools. This lack of appreciation has introduced an unfortunate bias, and since it is so important that questions of education should be judged strictly upon their merits, it seems desirable to correct Mr. Ware's account of these schools.

To point out one or two facts which Mr. Ware has misunderstood. The money available for technical education under the Local Taxation (Customs and Excise) Act, 1890, was placed at the disposal of the County Councils, and was not, as Mr. Ware takes for granted, administered by the Science and Art Department. Nor was the money raised by levying rates under the Technical Instruction Act, 1889, in any way at the disposal of the authorities at South Kensington.

Similarly it must be borne in mind that higher-grade schools date from the seventies, and were not first called into existence after the educational legislation of 1889 and succeeding years. Yet after referring to the Acts of 1889 and 1891, Mr. Ware says (p. 9): "The money placed at the disposal of the Science and Art Department, under the Acts to which I have alluded to above, for the promotion of technical instruction, offered the only means of satisfying what had become the most important condition of the new demand, namely, that higher as well as elementary education should be directly under popular control.

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[1] "Educational Reform." By Fabian Ware, xii + 139 pp. Methuen & Co.) 1900. 2s. 6d.

For if upper departments were added to the board schools, by bestowing technical instruction they might claim a share of the money thus provided. This, in a few words, is the history of the foundation of higher-grade schools." It is notorious that technical instruction committees rather than assist schools administered by School Boards have shown a disposition to limit and curtail their work. There is little foundation for Mr. Ware's statement other than that in one or two cases the technical instruction authority has awarded a few scholarships tenable at higher grade schools.

In another place Mr. Ware speaks of "a contest between the higher-grade schools thus supported and the smaller endowed schools;" but, as Mr. R. L. Taylor, of Manchester, pointed out in his presidential address to the Association of Higher Grade School Headmasters in 1898, this contest is, when the endowed school is efficient, very largely a matter of imagination.

Nor are the "schools of science" which have been established by the Science and Art Department exactly understood and appreciated by the author of "Educational Reform." In more than one place the reader is told that Latin may take no part in the curriculum of such schools, yet the present writer knows more than one such school where Latin is taught. Moreover, is it not becoming a common thing to find higher-grade schools, which are very often schools of science, credited with a number of successful candidates at the London University Matriculation Examination?

But it is not a pleasant task to point out shortcomings in a book which one has read with pleasure. Mr. Ware, even when incorrect, is interesting, and his book will have served a useful purpose if it succeeds in increasing the desire of the public for a satisfactory system of national education in which secondary schools take their proper place We all earnestly desire that secondary education may be placed upon a proper basis; but it is of the highest importance that all good work should be adequately recognised, and there can be little doubt that the more intimately the part which higher-grade schools are taking in educating our future citizens is known, the more exalted the place they will hold in our estimation.

There is little in Mr. Ware's book which is not already familiar to schoolmasters who have taken an interest in the growth of educational enthusiasm during the last decade, and apart from the unfortunate blemishes to which attention has been directed, there is here provided a popular sketch of some of the questions which will presently engage the attention of the Board of Education.

A. T. S.

RECENT SCHOOL BOOKS.

Modern Languages.

Racine, Athalie. Edited by H. W. Eve, M.A. xxxvi. + 155 pp. (Pitt Press Series.) 2*s.* There can be little doubt that this is the best English edition of "Athalie." Mr. Eve summarises in masterly fashion the history of French tragedy and Racine's place in it. Such a concise account was badly wanted, and teachers will be glad that Mr. Eve has done for them a very difficult piece of work. The editor gives a clear account of the play and the more important characters in it; and devotes some fifteen pages to the French Alexandrine, about which he gives much useful, though not always orthodox, information. The text is carefully printed and the notes are copious and excellent.

Modern French Authors. Select Passages, with Literary and Critical Notices, compiled by L. E. Kastner, B.A. *Junior Course,* 219 pp. (Blackwood.) 2*s.* 6*d.* *Senior Course,* 210 pp. (Blackwood.) 2*s.* 6*d.*—These two clearly printed volumes contain a large number of prose and verse passages, which have been very well chosen on the whole. Such books are useful for practice in unseen translation, not as an introduction to the study of literature. No one can form an estimate of an author's work on the strength of reading from four to a dozen lines of "critical remarks," even if they are better expressed than Mr. Kastner's, and a few snippets from his works. We have noted a certain number of errors in the printing, especially with regard to the accents.

Mme. de Ségur, Histoire de la Princesse Rosette and La Petite Souris Grise. Edited by Blanche Daly Cocking. 88 pp. (Arnold.) 9*d.* —These fairy tales are written in easy French, very much like that of Perrault. Miss Cocking has supplied copious notes, which give much information on points of elementary grammar, and a vocabulary, which is sufficient for its purpose. (Is there a substantive *la mie*, meaning "dear," "love"? A note would have been preferable to this entry.)

A Modern French Grammar. By J. U. Ransom. 92 pp. (Relfe Bros.) 1*s.* -There are really no strikingly novel features about this book to justify its publication or a detailed notice. There are the usual rules, with exercises for translation from and into French. We are getting tired of such sentences as *Mes amis ont mes plumes et mes crayons, ils n'ont pas trouvé les leurs.*

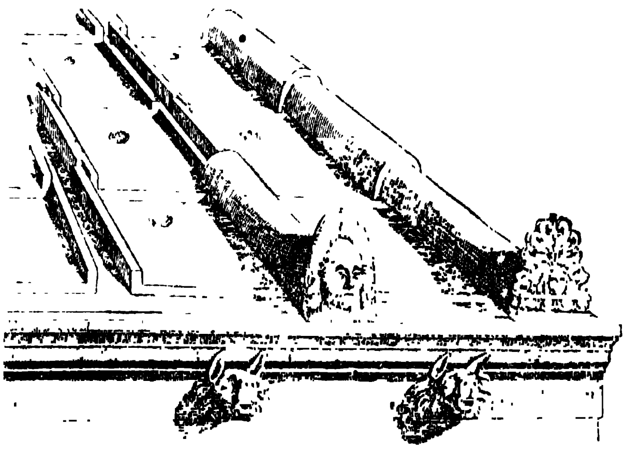
Schiller's Jugendjahre. Edited by Hanby Crump. viii. + 111 pp. (Whittaker.) 1*s.* 6*d.* It is a pity that the editor did not give a little more time to his work. He does not seem to have made up his mind who the author of this text is. On the title page it is "Franz Hoffmán," and on the cover "E. T. A. Hoffmann"! The text is not revised according to the spelling now generally adopted; not even the old spelling is consistently employed. The vocabulary is quite inadequate. Only the Notes are tolerable. We cannot recommend the book.

A First German Writer. By A. A. Somerville, M. A., and L. S. R. Byrne, M.A. xv. + 261 pp. (Rivingtons.) 3*s.* 6*d.*—Occasionally we find in this book the neat expression of a rule, the outcome of practical teaching; but, on the whole, we feel pity for the pupil condemned to work his way through the long word lists and the large numbers of detached sentences in this volume. Occasionally the latter are intended to be funny, sometimes they are sentences which no one would ever utter in English or feel tempted to express in German. We quote a few:—"During the dance they lost their new buttons." "He called me a fool once. I hit him on the nose." "He breathed the pure air, and bought the house." "Where are the owners of the keys of the watch and of the clock?" There are not many actual inaccuracies in the printing; care should, however, have been taken to let a comma precede every relative sentence, as is the rule in German. If due attention is given to the punctuation, it will be found a considerable aid towards securing the proper order of words. It should be added that there are no exercises for translation from German into English.

Classics.

Scriptorum Classicorum Bibliotheca Oxoniensis. This is a new series of Classical Texts from the Oxford University Press. The first four volumes now to hand are the following: *Platonis Opera* (*Tetralogiæ I.-II.*). By J. Burnet. Limp cloth, 6*s.* *Thucydidis Historiæ* (*Libri I.-IV.*). By H. S. Jones. *Lucreti Cari de rerum natura.* By C. Bailey. 3*s.* *Cornelii Taciti opera minora.* By H. Furneaux. 2*s.* They are also issued in paper covers, and the Plato and Lucretius on India paper.—These are very pleasant and attractive texts, and the series should prove quite worthy of the Oxford Press. The editors have been at great pains to produce the best possible critical text, and after making their choice note various readings at the foot of the page. The position taken in the following conclusion to the preface of one of the books is unimpeachable: "In hac editione perraro invenientur quæ nova sint aut non prius temptata. Malui editorum laboribus fretus libellum bene sanatum proferre quam nova adhibendo medicamina aut nova vulnera adferre aut vetera adgravare."

Virgil. Georgic IV. By J. Sargeaunt, M.A. xxix. + 100 pp. (Blackwood.) 1s. 6d.—The illustrations in this volume of "Classical Texts" are not the least noteworthy feature. Copies of statues, wall paintings, pictures from vases (in colours), such as the "First Swallow of Spring," a tiled roof (here reproduced), lend variety and interest to the text and notes. There are also several useful appendices and indexes, and altogether this is a very good school edition of the old bee-book. We are glad to note the proper use of *u* and *i* (consonantal).



Vergil. Æneid II. By A. S. Warman, B.A. *Æneid IV.* By L. D. Wainwright, M.A. These two books maintain the useful features of Messrs. Bell's now well known Illustrated Classical Series. 1s. 6d. each.

Edited Books.

An Introduction to the Works of John Milton. By H. Corson, LL.D. 303 pp. (Macmillan.) 5s.—Professor Corson has already deserved well of his fellow men by his book on the "Aims of Literary Study." His claim is rendered even greater by the publication of this volume. It is an attempt to construct an autobiography of John Milton out of the scattered references to his personal history which are embedded in his letters, and in his prose and poetry; and also to give a fair statement of his own essential opinions in his own words. This is a unique plan, and it must be admitted that the book has been very well done. It may of course be questioned whether a volume of selections, with all the advantages of an able scholar's notes and prefaces, will ever overtake the biographies written by such men as Dr. Garnett and Mark Pattison, not to mention Professor Masson; but it has at least this advantage, that we have Milton's own detached estimates of things, which many who read, (or wade through,) his prose and poetry sometimes forget to consider; and with the man thus before us, we make fewer mistakes about him than we should if we trusted, say, to Mark Pattison, whose constitutional bias would never allow him to admit the real seriousness of the times in which Milton lived. This volume may be most confidently recommended to all who want to get a view of the true Milton. It is a welcome addition to the Milton literature, which is slowly, but surely, assuming the same proportions as Dante study is beginning to give to the work of the great Florentine.

The Spenser Anthology. (British Anthologies.) Edited by Professor Edward Arber. 312 pp. (Henry Frowde.) 2s. 6d.—This delightful volume covers the period from 1548 to 1591, and it fully maintains the representative catholic character of the preceding volumes. To all lovers of English verse, and especially to those who find it difficult to procure access to much of the still half-buried literature of Elizabeth's time, this volume will come as a treasure. The index and glossary make it even more valuable, giving as they do complete evidence of care on the part of the editor. In this volume, too, a large number of anonymous poems are included; and of those whose authorship is revealed only a very small proportion belong to the better-known names of that prolific period in which Spenser lived. It is, therefore, with much of the relish of an antiquary that one turns these pages. The volume is neatly bound, and printed in a type which suggests, almost as much as the phraseology, antiquity and quaintness. Decidedly this venture of Professor Arber's deserves to be widely supported.

Grammar.

The Uses of the Parts of Speech. 6d. *English Grammar, Alternative Course.* By J. C. Nesfield, M.A. (Macmillan.) Standard IV., 3d.; V., 4d.; VI., 5d.; VII., 6d.—These books contain much that will be of service to teachers of grammar in primary schools; the explanations of terms and rules are sufficiently clear and full, and the numerous exercises based on the text are very suitable ones. Nevertheless, we are afraid Mr. Nesfield will add nothing to his reputation by these text-books signs of haste and careless composition present themselves somewhat frequently. In IV., p. 31, we are told that "all verbs do not require a complement"; in VI., p. 44, the conjunction *before* in "the rain fell before we reached home" is said to join *its own sentence*" (?), "we reached home," to "the rain fell." In V., p. 40, we have the sentence, "Here *fire* is subject to the verb *burns*; and *son* is the person addressed." In VII., p. 9, an adverb is said to qualify a noun!

History.

Events of England in Rhyme. By Mary B. Crook. 56 pp. (Longmans.) 1s.—Is neither better nor worse than its predecessors.

A First Sketch of English History. By E. J. Mathew. viii. + 164 + 225 + 109 pp. (Macmillan.) 3s. 6d.—We noticed the first part of this book in the January number of last year. The remainder of the book, though good and useful in the main, seems to have something of the same defects as we then pointed out. Too much is categorical. Hallam's "five checks," for example, are still given, though every page proves their utter impotence. The religious aspect of the 17th century struggles is neither understood nor explained, and the arrangement of the chapters in the portion devoted to the 18th century is most bewildering.

Outlines of French History. By J. A. Joerg. vi. + 90 pp. (Swan Sonnenschein.) 2s. 6d. A brief summary of French history, of which the first half brings us down to the end of Louis XIII.'s reign. Whenever it touches English history, it seems to consist of extracts from a possible history of England, for nothing is told in those periods except what directly interested England at the time. For example, the War of the Polish Succession, 1733, is entirely omitted, though thereby France acquired Lorraine.

The Age of Johnson. By Thomas Seccombe. xxxvii. + 366 pp. (Geo. Bell & Sons.) 3s. 6d.—Mr. Seccombe is an enthusiast for the 18th century, and his somewhat long introduction is devoted to a repulse of the almost universal charge against the age, that it is "dull." The consequence of the author's enthusiasm and his evidently thorough knowledge of the subject is a most readable and interesting volume. We found ourselves compelled to read, even when we were at first inclined to take samples. Short of studying the literature ourselves (and Mr. Seccombe certainly would persuade us if we had leisure to follow him deep and wide), we know of no book which gives us so much solid, and at the same time, delightful information about the books and book writers of the last century. He divides his subjects topically, and we cannot do better than name here the headings of his chapters. They are successively, Essayists and Critics, Memoirs and Letters, Political Writers, Study and Research, the Theologians, the Historians, the Great Novelists, the Minor Novelists, the Drama, the Poets. Certainly, if the age *was* "dull," this book is not.

Geography.

Macmillan's Geography Readers. Book I., 10*d.*; Book II., 1*s.*—These two "readers" are written in an easy and interesting style; the illustrations, plain and coloured, are good, and young children will pick up a good deal of information from the books, and, what is more important, will probably insist on being told more. We note, with surprise, that a volcano is said to be a *mountain* that sends out smoke, lava and ashes (Book II., p. 108).

Geographical Handbooks. A series of ten. (Arnold.) 3*d.* each.—We have already commented favourably upon six books in this series. The four now to hand—Africa, United States of America, Central and South America, the World in Outline—are equally good. Useful diagrams and maps, combined with trustworthy information, make the series an exceedingly cheap one. A list of some of the contents may be interesting to teachers—Climate of African Countries, Imperial Penny Postage, Discoveries of African Explorers, The Philippine Islands, Venezuela, The Ridge of the World, Volcanoes and Geysers, etc. What makes the handbooks especially valuable is that the information is so thoroughly up-to date, *e.g.*, the paragraph on the eastern boundary of Venezuela.

Specimen Lessons and Hints on Method. Part I. The British Isles. (Philip and Son.) 4*d.*—The Map-building Sheets of this firm are well-known, and the book before us is intended for the use of teachers who employ them. The hints given are good, and we wish more form-masters would realise that "learning geography does not consist merely in the acquirement of a knowledge of topography."

Geographical Questions. By J. Wulfson. (Relfe.) 6*d.*—These questions are framed with a view to testing the knowledge of pupils studying "Commercial" Geography. They are well arranged, and should prove useful to teachers and students alike.

Mathematics.

Elementary Plane Trigonometry. By C. Pendlebury, M.A. xii. + 160 pp (G. Bell & Sons.) 2*s.* 6*d.*—For examination purposes, and for the necessary class drill, this book seems to be admirably suited: the book-work is given in "examination form," appeals to the eye in clarendon type are frequent, and there are countless examples, including (we doubt not) all the usual types. It is not the author, but the whole system of English mathematical instruction, that must be held responsible for the aridity which this work shares with many other approved text-books. Personally, we prefer the discursive method, and think they do these things better in America: but until the present tyranny has passed away, teachers will be grateful for a text-book so well adapted for the ends which they are compelled to keep in view.

Plane Trigonometry for Colleges and Secondary Schools. By D. A. Murray, B.A., Ph.D. xiv. + 206 pp. (Longmans.) 3*s.* 6*d.*—An excellent treatise which may be cordially and unreservedly recommended. The subject matter (which extends to and includes the solution of triangles) is arranged in an order from which few teachers, we think, will wish to depart: the typography and diagrams are accurate and beautiful; and the exercises are both practical and interesting. Historical notes are given occasionally; this, undoubtedly, helps to make the subject attractive. One oversight may be noted: on p. 156, the ambiguity of the radicals should have been pointed out and accounted for, especially when it is said that A and x denote *any* angles.

Geometrical Drawing. Part I., Plane and Elementary Solid. By W. H. Blythe, M.A. xvi. + 192 pp. (Cambridge University Press.)—Owing, probably, to hasty composition and inadequate proof-reading, this book is not free from minor errors of style and expression. Thus the explanation of the construction of the cycloid, etc., on p. 112, will not be found clear by a junior student; on p. 114 we must read "found below" for "found above," or else transpose the text; the figure bounded by three circular arcs is improperly called a "spherical triangle;" on p. 129 we read, "This property is known as Anharmonic ratio;" and so on. Still, in spite of these defects, the book will be useful for elementary class-work: the chapter on similar figures is above the average in merit; and there are numerous solved and unsolved examples, mostly selected from the Science and Art and the Civil Service examinations. It may be remarked that the author's solution of problem 154 would probably not be accepted by an examiner, as it assumes that the diagram given is accurately drawn to scale.

Science and Technology.

Elementary Practical Physics. By Henry Stroud, M.A., D.Sc. xi. + 281 pp. (Methuen.) 3*s.* 6*d.*—The continued production of books dealing with practical work in physics is convincing evidence of the increased appreciation of the educative value of an appeal to other senses than that of hearing in teaching science. Practical physics is a school subject of such recent growth that the large number of books concerned with it is extraordinary. Professor Stroud's volume goes over familiar ground, and will prove suitable for first and second year students in Schools of Science, as well as for undergraduates who are studying for intermediate examinations in science. The printing is excellent, and the illustrations, as far as the elucidation of the text is concerned, are good, though the student will not always see how to fit up an experiment from them. This leads to another point. Professor Stroud would, we think, have been well advised in making the distinction much clearer between his descriptive paragraphs and those giving instructions to the student as to the experiments he is to himself perform. The book forms a good introduction to practical physics.

Building Construction for Beginners. By J. W. Riley. vi. + 255 pp. (Macmillan.) 2*s.* 6*d.*—Adapted to the Elementary Syllabus of the Science and Art Department, this book will be found exceeding useful to all who wish to obtain clear and definite information on the principles of building construction. In the fourteen chapters into which the book is divided the work of the bricklayer, mason, carpenter, joiner and plumber are dealt with in a very able manner. Perhaps the most important feature of the book is in the wealth of illustrations which number 637, and are evidently the work of a teacher who not only thoroughly understands the subject, but also how to present it to others in its most attractive form. The very frequent use of isometric projection, and the clear lettering of the various parts, will help very materially even the most backward student to realise clearly the forms and proportions of the component parts of a building. At the end of each chapter a brief summary of the most important points in them is given; these, together with a large number of carefully graduated questions, will be found very serviceable. The only defects we have noticed are the somewhat faulty drawings of rivets.

Miscellaneous.

The Logical Bases of Education. By J. Welton, M.A xvi. + 288 pp. (Macmillan.) 3s. 6d.—That logic, like psychology, provides no prescriptions for immediate application in the treatment of pedagogic "cases," may be granted; but its value to the practical teacher is in no way lessened by the admission. Education must be built upon certain logical bases, if it is to have its proper function, which is, to use Prof. Welton's words, "to guide each pupil from the beginnings of knowledge in sense-perception, through the second stage of recognition of law, into the third stage, in which it is seen that all laws must find their reason and explanation in system." The author very wisely ignores traditional formal logic, and looks rather to "those modern developments of logical theory which have marked the latter half of this century." Prof. Welton writes in an interesting and, on the whole, simple manner. Personally, we find the number of extracts from other writers a little irritating; we would rather have the author's own views, even if we disagreed with every one of them, which, after the time we have spent with his book, we are sure would have been a very unlikely contingency. There is a special appropriateness about the subject of the volume, as it forms the first of a series of manuals for teachers, which is being prepared under the joint-editorship of Mr. Oscar Browning and Dr. Fletcher, both of the Cambridge University Day Training College. The book is commended to the attention of earnest teachers who, not having formally studied logic, are anxious to acquaint themselves with the principles of a science which they are in the habit of hearing described as indispensable to the educator.

Unwritten Laws and Ideals of Active Careers. Edited by E. H. Pitcairn. x.+358 pp. (Smith, Elder & Co.) 7s. 6d.—It was an excellent idea of Miss Pitcairn's to persuade distinguished men representative of the chief professions to set forth what seemed to them the ideals of the various spheres of activity with which they were severally familiar. The book makes most interesting reading, and the amount of information contained in the essays respecting the customs pertaining to the professions treated of should make the volume one of exceptional value to schoolmasters. To give an idea of the authoritative character of the essays it will suffice to name a few of the contributors. Sir Edward Malet writes of ambassadors. Lord Monkswell deals with the House of Lords, and Sir Reginald Palgrave with the House of Commons. Sir Herbert Stephen treats of judges, and Mr. Augustine Birrell of barristers. Bishop Welldon, late Headmaster of Harrow, contributes the essay on schoolmasters. The remaining twelve essays are, moreover, all by men in the very first rank. We especially commend to the notice of our readers the two contributions on schoolmasters and boys at public schools. As would be expected, the ideal which Bishop Welldon sets before headmasters is a very lofty one. The headmaster of a great public school must be a scholar, and to some extent a man of letters. He must at the same time be in the best sense a man of the world. "Yet it remains true that all these qualifications of a headmaster, valuable as in themselves they are, will serve him little, unless he possesses or can acquire the special tact which is the secret of educational success." These characteristics are only a few of the virtues of Bishop Welldon's ideal headmaster. The others must be sought in the book before us. The public schoolboy is a wonderful creation, and the number of his unwritten laws is legion. We are bound to confess that "swagger" seemed easy to understand and define before we read Mr. Heywood's essay, but we are wiser now. Nor are "cheek," "fagging," "tanning," "whop," the simple terms which the uninitiated imagine. But they all become clear after reading Mr. Heywood's contribution. The book is very suitable for a school library, and is just the kind of reading to improve a boy's general knowledge.

Half-Text History. By Ascot R. Hope. vii.+366 pp. (A. & C. Black.) 3s. 6d.—Mr. Hope's companion volume to "Cap and Gown Comedy" has reached its second edition. "Boys are here looked on as men in little, and the events in school life shown to be history written, as it were, in half-text or sprawling round hand." Like other stories from the same pen, it will long be a favourite with boys.

Training of the Young in the Laws of Sex. By Rev. the Hon. E. Lyttelton. ix.+117 pp. (Longmans.) 2s. 6d.—This delicate, yet manly, treatment of a subject of vital importance is very appropriately dedicated to parents. We heartily agree with the Master of Haileybury that the duty of enlightening young minds as to the great facts of reproduction is most satisfactorily accomplished in the home. That it is right to equip boys and girls with a healthy and intelligent knowledge as to the meaning of sex, we have no doubt. There are very real dangers to be met in youth, and it is a cowardly and reprehensible custom which leads fathers and mothers to neglect to accomplish in a proper manner what some evil-minded companion is sure to do in a way as brutal as it usually is incorrect. The difficulties of the task are in this little book considered by a man of large experience with a thorough knowledge of boys, and we cordially direct attention to it.

Designs for Chip or Knife Carving. By E. Scrivener. (Winchester: P. and G. Wells.) 1s. 8d. post free.—These consist of four sheets of full-sized working drawings. No. 1 sheet, a design for an octagonal table, is very good. No 2, a design for a small table top (circular), is somewhat confused. There are, however, several good borders on this sheet. In sheet 3, the design for a small circular table top is praiseworthy, but that for a rectangular table top is not so good. It is doubtful whether a table top should be decorated with carving, and if at all the depth should be very slight. Sheet 4 consists of some fair designs for tops of stools.

Philip's Artistic Flower Studies. One packet of twelve coloured examples (1s. 3d.), one packet of the same flowers in outline to be filled in with colour (3d.).—These examples are well selected, and would be useful to give very young children. The tints of the flowers are good, but those of the leaves are too much alike.

Mother's Songs, Games and Stories. (Froebel's "Mutter- und Kose-Lieder.") Translated by Frances and Emily Lord. Containing the original illustrations and music. xxxvi.+238 +75 pp. (W. Rice.) 2s. 6d.—All persons who are responsible for the training of young children should study this volume, and if sufficient time for a careful reading of the book is not available, it should be kept in a convenient place for the purposes of reference. The games and songs, which show a profound knowledge of the educational needs of children, are masterpieces. Froebel knew too well the detrimental effect of attempting to instil into young minds ideas far beyond their mental grasp, and the explanations he has added to the different parts of his work should prove of the greatest value to a teacher making use of his book. The tunes are melodious and spirited; they are mostly arranged as duets of reasonable compass.

An Ethical Sunday School. By Walter L. Sheldon. vii. + 206 pp. (Swan Sonnenschein.) 3s.—The object of this book is to describe a new type of Sunday school, not intended to be antagonistic to the schools conducted on orthodox lines, but designed to equip children with sound, practical, ethical principles. The book is likely to prove useful to teachers, as it incidentally shows where useful material from many writers, for amplifying the religious knowledge lessons, is to be obtained.

Muscle, Brain and Diet. By Eustace H. Miles, M.A. xv. + 345 pp. (Swan Sonnenschein.) 3s. 6*d.*—Mr. Miles is already known as a writer on various school subjects, but this is, we believe, his first volume on dietetics. He has, his book tells us, received great benefit from the use of certain simple, cheap foods, and is anxious that others should know his experience and be led to profit by it.

LONDON MATRICULATION, JUNE, 1900.

Monthly Test Papers. No. 3.

THE third of a series of five test papers covering the syllabuses of all the compulsory subjects of the London University Matriculation Examination, together with test papers in French, is published this month. Copies of any of the papers can be obtained in a form suitable for distribution in class. The reprinted papers are sold in packets of twenty-five at a cost of 6d. net for each subject. The papers may be ordered through a bookseller, or they may be obtained (post free) from the editors of THE SCHOOL WORLD, but in the latter case all orders *must be prepaid.* Judging by the demand for similar papers last year, teachers would be well advised in making early application, as a limited number only is printed.

Latin Grammar and Composition.

(1) Give the gender, genitive singular and accusative plural, of—sedile, amnis, lis, bos, ōs, res, aes, flos, vulgus, fulgur.

(2) Distinguish between—aedes (sing.), aedes (plur.); castrum, castra; littera, litterae; vis, vires; sĕcuris, sēcurus.

(3) Compare—audacter, bene, digne, acriter, diu: and form adverbs from—unus, duo, octo, viginti, nonaginta. Give the Latin for 3,000 citizens, July 3rd.

(4) What are the principal parts of—sino, pasco, arcesso, sterno, colo: and parse—velint, fieres, eamus, ferris, dic.

(5) Construct short sentences illustrating the different uses of—dum, num, quam.

(6) Classify the chief uses of the genitive case and give examples.

(7) Explain the cases of the words in italics—(*a*) *consilii* expers; (*b*) anxius *animi*; (*c*) hoc *mea* refert; (*d*) reus *avaritiae*; (*e*) *mea unius* opera.

(8) Translate into Latin—
- (*a*) Did you not go from Rome to Carthage last year?
- (*b*) Tell me when they will go to the country.
- (*c*) He told them that they must defend the freedom of their country with all their power.
- (*d*) He ordered the ships to be made lower in the water, and broader than ships usually were made.
- (*e*) Dumnorix tried to persuade Cæsar to allow him to stay in Gaul.

(9) Translate into Latin, putting it into oratio obliqua, "Do not cause the spot on which you stand to be memorable from the destruction of a Roman army."

Latin—Cæsar.

DE BELLO GALLICO, V. Ch. 1–7.

(1) Translate:
- (*a*) Ch. II. His confectis rebus . . . deduci possint.
- (*b*) Ch. III. Sed posteaquam . . . fidei permissurum.
- (*c*) Ch. VI. Posteaquam . . . administrarent.

(2) Translate, with grammatical notes on the words in italics.
- (*a*) Caesar discendens in Italiam, ut *quotannis* facere consuerat *legatis* imperat, quos *legionibus* præfecerat, uti quam plurimas *possent*, *hieme* naves *aedificandas curent.*
- (*b*) *Nihilo* tamen secius principibus Treverorum ad se convocatis hos singillatim Cingetorigi conciliavit, quod cum merito eius ab se fieri intellegebat, tum *magni* interesse arbitrabatur eius auctoritatem inter suos quam plurimum valere, cuius tam egregie in se voluntatem *perspexisset.*

(3) Give the meanings of subductiones, actuarius, conventus, concilia, ad diem, lis, poena, pro sano.

(4) State briefly what you know of Indutiomarus, Dumnorix Cingetorix; Illyricum, Pirustae, Treveri, Arduenna, Meldae Haedui.

(5) Parse and give the principal parts of Exarsit, audebant progredi, consuerat, laberetur.

(6) Translate.
- (*a*) Aemilius Paullus, cum Macedonicis opibus veterem urbis nostræ paupertatem eo usque satiasset, ut illo tempore primum populus Romanus tributi præstandi onere se liberaret, penates suos nulla ex parte locupletiores fecit, præclare secum actum existimans, quod ex illa victoria alii pecuniam, ipse gloriam occupasset.
- (*b*) Cervus equum pugna melior communibus herbis
  Pellebat, donec minor in certamine longo
  Imploravit opes hominis frenumque recepit;
  Sed postquam victor violens discessit ab hoste
  Non equitem dorso, non frenum depulit ore.

English Language.

NOUNS, PRONOUNS, VERBS.

(*Literature*, 1550—1660.)

(1) Give instances of nouns that have (*a*) two meanings in the Singular against one in the Plural; (*b*) one meaning in the Singular and another in the Plural; (*c*) no Singular; (*d*) a Singular form with a Plural meaning; (*e*) mutation Plurals.

(2) Explain these words—*eaves*, *wont*, *hight*, *methinks*, *hers*, *soliloquies*

(3) Distinguish between the Restrictive and Continuative uses of *who* and *which.* When may the Conjunctive pronoun be omitted? Parse *but* in "None but John came."

(4) Define the terms—*Transitive*, *Auxiliary*, *Complement*, *Strong*, *Reduplication*, as applied to verbs.

(5) What are the functions of (*a*) the Gerundial Infinitive; (*b*) the Cognate Object?

(6) What is the correct usage of *shall* and *will?* Give examples.

(7) Correct the following sentences, and give reasons for your corrections—
- (*a*) We never wish to visit you again.
- (*b*) More than one of the spectators turned his back upon the fellow.
- (*c*) Neither you or I am satisfied.
- (*d*) He is one of those who seldom speaks about men he did not approve of.
- (*e*) No one knows whether this is the best of all the other paintings or no.

(8) Analyse—
- (*a*) Never to be born is best.
- (*b*) We commanded him to leave.
- (*c*) They were given a month in which to pay the fine.
- (*d*) You have been appointed secretary.
- (*e*) Who saw him die?

(9) Write a few lines about the following—*Comedy of Errors*, *Bartholomew Fair*, *The Fairy Queen*, *Arcadia*, *Hudibras*.

(10) Write an essay on—

(*a*) The national character of France.

(*b*) "All seems infected that the infected spy."

English History.

(1485-1603.)

Not more than **eight** *questions to be attempted, of which one must be Q.* **12.**

(1) Draw a genealogical table, starting from Edward III., to illustrate Henry VII.'s claim to the throne of England.

(2) How was the succession to the Crown regulated under the Tudor monarchy?

(3) Give a succinct view of the causes which led to Henry VIII.'s breach with Rome.

(4) Trace the course of events from 1530 to 1540.

(5) Give a brief account of the *Act of Supremacy* in the reign of Henry VIII.

(6) Give an account of the charges under which Sir Thomas More was imprisoned and executed.

(7) What were the grievances that led to—

(*a*) The Pilgrimage of Grace.

(*b*) Ket's Rising.

(8) Explain the causes of the reaction against Protestantism at the beginning of Mary's reign.

(9) Describe carefully Elizabeth's ecclesiastical policy, *either* (i.) indicating the measures in which it was embodied, *or* (ii.) showing its connection with home and foreign affairs.

(10) Write a concise biographical sketch of one of the following persons—

(i.) Mary, Queen of Scots; (ii.) Cranmer; (iii.) Cecil, Lord Burghley; (iv.) Ralegh.

(11) Enumerate the crises in the progress of the Reformation under the Tudors.

(12) Draw a map of England, inserting the sites of the chief monasteries.

Arithmetic and Algebra.

(*Including Interest, Simple and Compound, and Discount in Arithmetic, and Miscellaneous Fractions in Algebra.*)

(1) Find, to the nearest inch, the length of the diagonal of a square field whose area is $15\frac{1}{2}$ acres.

(2) (i.) A grocer buys sugar at the rate of £2 13s. 4d. for three cwts. and sells at the rate of 7lbs. for 1s. 3d.; what is his profit per cent.?

(ii.) In what time will the Simple Interest on £467 10s. amount to £37 8s. at the rate of $2\frac{1}{2}$ per cent. per annum?

(3) What is the difference between "true" discount and "commercial" discount?

The difference between the "true" discount and the "commercial" discount on a bill due three months hence is 4s. 1d.; if the rate of discount be $3\frac{1}{3}$ per cent. per annum, find the amount of the bill.

(4) Multiply $a-\sqrt{ab}+b$ by $a+\sqrt{ab}+b$.

Show that if a is a real quantity, the smallest possible value of the expression $a^2-6a+10$ is 1.

(5) Show that $1-x$ is a factor of

$$(1-xy^2)(1-16x)+3x(1-y)(4xy+y+5);$$

and find the quotient.

(6) (i.) Find the value of x which makes $(9x-1)(x-1)+3(x+1)+5$ equal to $(3x-2)^2$.

(ii.) If $2a-3x=\frac{(y-z)^2}{x}$ and $2a-3y=\frac{(z-x)^2}{\ }$ show that $x+y+z=a$.

(7) Find the Lowest Common Multiple of

$$2x^3-x^2-4x+3,\ 3x^3+2x^2-3x-2 \text{ and } x^3+3x^2-x-3.$$

(8) Simplify the expressions:—

(i.) $\dfrac{x^4-4x^3+10x^2-28x+21}{x^4+x^3-5x^2+7x-84}$;

(ii.) $\dfrac{3}{(x-2)(x-3)}-\dfrac{2x}{(x-1)(x-3)}+\dfrac{2x-1}{(x-1)(x-2)}$

(9) The weekly wages of 28 men, 4 women and 10 boys employed in a certain business amount to £41 18s. If 8 of the men and 4 of the boys were discharged, the amount would be decreased by £11 16s. A man earns four shillings a week more than a woman and a boy together; how much is earned per week by each man, woman and boy?

Answers.

(1) 1 fur. 30 po. 2 yds. 1 ft. 1 in. (2) (i.) $12\frac{1}{2}$%; (ii.) 3 years 73 days. (3) £2,690. (4) a^2+ab+b^2. (5) $1-4xy(y+3)$. (6) (i.) -1. (7) $(x-1)^2(x+1)(x+3)(2x+3)(3x+2)$. (8) (i.) $\frac{\ }{x+4}$ (ii.) 0. (9) 25s., 12s., and 9s.

Geometry.

(*Euclid. Books I., II. and III.*, 1-25.)

(1) The greater side of every triangle has the greater angle opposite to it.

(2) In a right-angled triangle the hypotenuse is twice the median. Thence prove that the isosceles right-angled triangle has a greater area than any other right-angled triangle described on the same base as hypotenuse.

(3) Parallelograms on the same base and between the same parallels are equal in area.

On a given straight line as base describe a triangle equal in area to a given triangle, and having one of its sides equal to a given straight line.

(4) The complements of the parallelograms about the diagonal of any parallelogram are equal.

(5) The sum of the squares on two given straight lines, together with twice the rectangle contained by them, is equal to the square on a straight line which is equal to the sum of the two given straight lines.

Express this proposition in an algebraical form.

(6) Find a point P in the straight line AB such that the rectangle contained by AB, BP may be equal to the square on AP.

Find the corresponding point in the straight line produced.

(7) QR a chord of a circle is bisected at A and produced to P, so that AP equals the radius of the circle. If O be the centre of the circle, show that the rectangle PQ, PR is equal to the square on OA.

(8) Equal chords in a circle are equidistant from the centre, and of others that which is nearer to the centre is greater than one more remote.

(9) Angles in the same segment of a circle are equal. AB, CD are two chords of a circle, ACB, intersecting at right angles at E; show that if a point G be taken in CD (produced, if necessary), so that EG equals CE and AG be joined, AG cuts BD (or BD produced) at right angles.

General Elementary Science.

PHYSICAL QUESTIONS.

(1) State the principle of Archimedes. A body appears to have a mass of 40lbs. when weighed in a liquid the density of which, relatively to water, is 2; its apparent mass in water is 45lbs. What is its volume; what is its density; and what is its mass? If you use an equation, explain carefully what it means, and why it is true.

[N.B. The mass of one cubic inch of water is 0·036 pound.]

(2) Why ought the water at the bottom of a waterfall to be warmer than at the top? Assuming that the mechanical value of the specific heat of water is 87 foot-pounds per ounce (for 1°C), and that Niagara is 160 feet high, calculate how much the difference of temperature ought to be for that waterfall.

(3) State Boyle's Law. Represent the following results of a rough experiment graphically—

VOLUME (V).	PRESSURE (P).
50·0	(76—31·2)
42·0	(76—21·8)
39·3	(76—17·9)

(4) Explain the terms—energy, kinetic energy, and potential energy.

(5) Describe the instrument known as Hare's apparatus. What advantages are there in using it to determine the relative densities of liquids.

CHEMICAL QUESTIONS.

(1) Describe how a commercial specimen of rock-salt could be purified. How could it be proved to be pure?

(2) What are the chief differences in property between the oxygen combined in water, and the oxygen dissolved in water?

(3) How would you prepare specimens of the gas evolved when common salt is heated with sulphuric acid? What are the chief properties of this gas?

French.

I. Translate the following passage:—

Bonaparte passa la nuit sous la tente à lire les journaux. Le matin, sa résolution était prise de retourner en France pour y ramasser le pouvoir à terre. Qu'il mit seulement le pied sur le territoire de la République, il écraserait ce gouvernement faible et violent qui livrait la patrie en proie aux imbéciles et aux fripons, et il occuperait seul la place balayée. Pour accomplir ce dessein, il fallait traverser par les vents contraires la Méditerranée couverte de croiseurs anglais. Mais Bonaparte ne voyait que le but et son étoile. Par un inconcevable bonheur, il avait reçu du Directoire l'autorisation de quitter l'armée d'Egypte et d'y désigner lui-méme son successeur.

II. Translate into French:—

During a journey that I once made through Holland I had arrived one evening at the Pomme d'Or, the principal inn of a small village. It was after the hour of the table d'hôte, and I was obliged to make a solitary supper. The weather was chilly: I was seated alone in one end of a great gloomy dining-room, and, having finished my meal, I had the prospect before me of a long, dull evening.

III.

(1) Write the feminine forms of *conducteur*, *discret*, *sot*, *vengeur*, *loup*, and the singular of *ces lois*, *les cieux*, and *les vieux châteaux*.

(2) What are the meanings of *la chair*, *la chaire*, *l'amande*, *l'amende*? Distinguish between *mur* and *mûr*; *sur* and *sûr*; *un petit fils* and *un petit-fils*; *voie*, *voix* and *vois*.

(3) After what verbs may the negatives *pas* and *point* be suppressed? Distinguish between the affirmatives *oui* and *si*.

(4) Give the 3rd singular present subjunctive, 2nd singular conditional, 2nd plural preterite and the participles of *mouvoir*, *faire*, *envoyer* and *tenir*.

(5) Give three examples of neuter verbs that are always conjugated with *être* and three which may sometimes take *être* and sometimes *avoir*. In the latter case explain how the auxiliary is determined.

JUNIOR OXFORD LOCAL EXAMINATION, JULY, 1900.

Monthly Test Papers, No. 3.

SIX test papers in the ten most popular subjects for the Junior Oxford Local Examination in July, 1900, have been specially prepared for us by teachers with a large experience of the requirements of the examinations. The third of the series is given below. Copies of the papers in any of the subjects can be obtained in a form suitable for distribution in class. The reprinted papers are sold in packets of twenty-five, at a cost of 6d. net. The papers may be ordered through a bookseller, or they may be obtained (post free) from the editors of THE SCHOOL WORLD, but in the latter case all orders *must be prepaid.*

Arithmetic.

(*Including Areas and Volumes, and Problems on Proportional Parts and Similar Rules.*)

(1) Simplify:—

(i.) $6\frac{1}{8}$ of $3\frac{5}{11} - 8\frac{1}{6} \div 5\frac{3}{7}$;

(ii.) $\frac{3}{10}$ of 7 crowns + $\frac{4}{15}$ of 6 half-sovereigns.

(2) Convert ·1596 into a vulgar fraction in its lowest terms; and add together 13·614, 4·231 and 1·28324.

(3) Find the value of 1·03984375 of £20, and find what fraction of 1 bush. 2 pks. 1 qt. 1 pt. is 3 galls. 1 qt. 1 pt.?

(4) Find, by Practice, the cost of 3 miles 5 fur. 24 poles of iron fencing at £48 10s. per mile.

(5) If 2 cwt. 3 qrs. 9 lbs. 3 oz. of sugar cost £3 17s. 4d., what will be the cost of 11 cwt. 3 qrs. 7 lbs. 7 oz.?

(6) What will be the amount of £169 6s. 8d. in $3\frac{3}{4}$ years at $2\frac{1}{2}$ per cent. per annum Simple Interest?

(7) If 1,080 bricks are required to build a wall 18 yards long, $2\frac{1}{2}$ feet high and 9 inches deep, how many will be required to build a wall 27 yards long, 3 feet high, of the same depth?

If each brick is $4\frac{1}{2}$ inches wide and 4 inches deep, what is its length?

(8) Find the square root of 5045402961 and of 1·652 to five places of decimals.

(9) Divide £660 between four persons, A, B, C and D, such that A's share may be to B's share as 6 is to 5, C's share to D's share as 9 is to 7, and A and B together receive half as much again as C and D together.

(10) A cistern is provided with two supply pipes and one waste pipe; the supply pipes can fill the cistern in 5 minutes and 6 minutes respectively, and the waste pipe can empty it in 4 minutes; two minutes after the supply pipes have been turned on, it is discovered that the waste pipe has also been open; if the waste pipe be now closed, how long will it be before the cistern is full?

Answers.

(1) (i.) $18\frac{3}{8}$; (ii.) £1 6s. 6d. (2) $\frac{7}{44}$; 19·129. (3) £20 15s. $11\frac{1}{4}$d.; $\frac{3}{11}$. (4) £179 9s. (5) £16 2s. 8d. (6) £185 4s. 2d. (7) 1,944; 9 inches. (8) 71031; 1·28550. (9) A, £216; B, £180; C, £148 10s; D, £115 10s. (10) $2\frac{1}{11}$ minutes.

Old Testament—Genesis.

(1) Relate in your own words the circumstances of Jacob's second treachery to Esau.

(2) Trace the course of Jacob's relations with Laban, explaining as fully as possible the Eastern customs illustrated thereby.

(3) Give an account of the history of Esau.

(4) Write out in order the names of Jacob's children, and give the signification of their various names.

(5) With what events in the history of Jacob are the following places connected, and what meanings are attached to the names Haran, Padan-aram, Beth-el, Mount Gilead, "Galeed and Mizpah."

(6) Give the context and explain:

(*a*) "Because of the daughters of Heth."

(*b*) "Laban son of Bethuel the Syrian."

(*c*) "Served with him yet seven other years."

(*d*) "My sleep departed from mine eyes."

(*e*) "This heap be witness and this pillar be witness."

(7) Relate Jacob's dream at Bethel, and the terms of his vow.

New Testament—St. Luke.

(1) State what you know about the career and family of Herod the Tetrarch.

(2) Explain the following—"my name is Legion," "into the deep," "border of his garment," "ruler of the Synagogue," "commanded them to give her meat," "two coats."

(3) What passages in this gospel testify to the importance of Elijah in the minds of the Jews? Upon what prophecy did they found their belief?

(4) What did our Lord teach about the penalty for being "ashamed" of Him? What explanations are given of the passage, "some which shall not taste death till they see *the Kingdom of God*?"

(5) In what particulars do the three accounts of the transfiguration resemble and differ from one another?

(6) How did Jesus lay stress upon the importance of following Him?

(7) "Many prophets and kings." Can you give any references from the Old Testament to support this statement?

English Grammar.

VERBS.

(1) Explain the terms—Mood, Tense. What kinds of sentences cannot be used in the Passive construction?

(2) Parse all the verbs in the above question.

(3) Give the principal parts of:—strive, lie, lay, sew, sow, chide, light, pen, melt.

(4) How do you distinguish between the two kinds of Infinitives?

(5) Explain the following words and phrases:—(a) *Methought*; (b) So *be* it; (c) He went *a-hunting*; (d) *Surrender* to you! (e) *To tell* the truth, I am guilty.

(6) When are *shall* and *will* not auxiliary verbs?

(7) Subjects for Essays:—
  (*a*) Your favourite hobby.
  (*b*) Should masters take part in school games?

English History.

(1216—1327.)

Not more than **five** *questions to be attempted*

(1) Write a life of **two** of the following persons, selecting **one** from (*a*) and **one** from (*b*):
  (*a*) Hubert de Burgh, Piers Gaveston, Sir William Wallace.
  (*b*) Peter des Roches, Robert Winchelsey, Stephen Langton.

(2) Give some account of *Confirmatio Cartarum.* What "charters" did that document "confirm," and in what ways did it supplement those charters?

(3) Trace shortly—the rise of a parliament in England during the thirteenth century, showing especially how its composition was influenced by Simon de Montfort and by Edward I.

(4) Tell the story of **any one** of the following—
  (*a*) The contest between Henry III and the Baronage.
  (*b*) Edward I.'s "Conquest of Wales."
  (*c*) Bruce's struggle for Scottish independence.
  (*d*) Edward II.'s deposition.

(5) Trace carefully the dealings of Edward I. with Scotland, explaining what he aimed at and how far he succeeded in his aims.

(6) Describe the position of the following places, and indicate their historical importance during this period. *Amiens, Bannockburn, Dunbar, Evesham, Falkirk, Lewes, Rhuddlan, St. Mahé, Scone, Stirling.*

As You Like It.

(1) Describe the events which brought Oliver to Arden, and reconciled him to Orlando.

(2) Who are Corin and Silvius? What part have they to play in the story?

(3) What kind of man was Le Beau? Give reasons for your estimate.

(4) Assign to their proper characters the following speeches:—
I love to cope him in these sullen fits,
For then he's full of matter.
When I was at home, I was in a better place; but travellers must be content.
I will chide no breather in the world but myself, against whom I know most faults.
It is as easy to count atomies as to resolve the propositions of a lover.
Omittance is no quittance.
'Twas I, but 'tis not I.

(5) Write out the two songs of Amiens, and explain how they are suitable to their occasions

Geography.

SCOTLAND.

(1) Draw a map of Scotland, showing the position of Ben Nevis, the Sidlaw Hills, Carse o' Gowrie, Galashiels, Oban, Wick, Perth; show where it is crossed by the 56th parallel of latitude.

(2) In what parts of Scotland are coal and iron found? What towns or districts are engaged in ship-building, paper-making, brewing?

(3) Where are the chief watering places and health resorts of Scotland?

(4) Describe the course of the Clyde from source to mouth. What is its length? Name its tributaries.

(5) Name and describe the islands of the outer Hebrides.

(6) Give an account of the Scotch railways.

French.

(1) Translate into French:—
  (*a*) My friend Mr. Thompson has three sons. Have you ever seen them?
  (*b*) He is very fond of roses, and has plenty in his garden.
  (*c*) His Majesty the King will never pardon such a man as you.
  (*d*) Although he is a thief, still he is my son.
  (*e*) You do not know my friend Mary? Yes, I do.
  (*f*) As the river is frozen we ought to go skating (*patiner*) to-day.

(2) Translate into English:—

J'ai entendu dire plus d'une fois au maréchal de Villars que la bataille étant gagnée, comme il marchait à la tête de son infanterie, une voix cria: "Nous sommes coupés." A ce mot tout ses regiments s'enfuirent. Il court à eux, et leur crie: "Allons, mes amis, la victoire est à nous! vive le roi!" Les soldats répondent: "Vive le roi!" en tremblant, et recommencent à fuir. La plus grande peine qu'eut le général, ce fut de rallier les vainqueurs. Si deux régiments ennemis avaient paru dans le moment de cette terreur panique, les Français étaient battus: tant la fortune décide souvent du gain des batailles.

(3) Give the feminine of *petit, beau, vaniteux, ceux, eux*, and the plural of *tout, monsieur, pays, official, je veux*.

(4) Give the rule for the formation of the feminine of words ending in *on, eur, in,* [illegible], *an.* Give examples and also exceptions to the rule.

(5) Write in French—99 men; the 400th page; the 1001 nights; the 28th February, 1900; give him two-thirds of it.

(6) Conjugate the imperfect indicative and present subjunctive of *marcher, croire, devoir*, and the two participles of *voir* and *mourir*.

(7) For those only who offer "Colomba" (pp. 51-82).
  (i.) Translate into English:
    (*a*) p. 57, ll. 21-32. La tour et . . . . sans traverser la place
    (*b*) p. 67, ll. 18-27. Au bout de . . . . de larges taches de sang.
    (*c*) p. 79, ll. 25-33. Ce furent les . . . . commença de la sorte.
  (ii.) Write notes on—*Taille, guet, mâchecoulis, curé,* [illegible].

(8) For those only who offer "L'homme à l'oreille cassée" (pp. 68-100).
  (i.) Translate into English:
    (*a*) p. 70, ll. 6-15. M. Nibor le retira . . . . atmosphère de vapeur.
    (*b*) p. 85, ll. 23-34. Pardonne-moi . . . ou te venger.
    (*c*) p. 90, ll. 13-19. Hélas! aucun de nous . . . au moins la parole.
  (ii.) Write notes on—*éléments de Bunsen, les voilà remis à flot, renaissance, à la retraite, foudres muets.*

Algebra.

(*Including Quadratic Equations and Problems thereon.*)

(1) Add together $\frac{a^2}{2}+\frac{b^2}{3}+\frac{c^2}{9}$, $\frac{a^2}{3}-\frac{b^2}{6}-\frac{c^2}{2}$, $\frac{2b^2}{5}+\frac{3c^2}{2}-\frac{a^2}{4}$, and subtract the result from $\frac{3a^2}{4}+\frac{b^2}{2}-\frac{8c^2}{9}$.

(2) Divide $6x^5-17x^4+34x^3-17x^2-x+28$ by $2x^2-3x+4$.

(3) Find all the factors of:—(i.) $6x^2+x-2$; (ii.) $a^2+6ab+9b^2+3a+9b+2$; (iii.) $81m^4-16(x-a)^4$.

(4) What is meant by the G.C.M. of two or more algebraical expressions?

Find the G.C.M. of $x^4-2x^3y-3x^2y^2-4xy^3-y^4$ and $x^3-4x^2y-4xy^2-5y^3$.

(5) Simplify:—

(i.) $\frac{1-2x}{x^2-7x+10}-\frac{x-5}{x-2}+\frac{x-2}{x-5}$;

(ii.) $\frac{a(b^2+c^2)+b(c^2+a^2)+c(a^2+b^2)+2abc}{(a+b)(b+c)(c+a)}$.

(6) Solve the equations:—

(i.) $2(3-2x)-3(3-4x)=7(3-5x)-3(8-\text{[illegible]}x)$;

(ii.) $x+y=a \qquad ax+by=b^2$.

(7) If a certain number of two digits be divided by the sum of its digits the quotient is 7, and if the digits be reversed and

the number thus obtained be added to the original number the sum is 99; find the number.

(8) If $a+b=c$, show that

(i.) $a^3+b^3=c(c^2-3ab)$;

(ii.) $c^2+a(2a-c)-\frac{3b^2}{4}=\left(c-\frac{b}{2}\right)^2+a$.

(9) Solve the equations:—

(i.) $(x-3)(x-4)+3(x-5)+6=0$;

(ii.) $x-y=4$, $x^2+y^2=40$.

(10) A certain number of trees is planted in an enclosure, there being as many rows as there are trees in a row; if there had been four more rows there would have been 725 trees altogether; how many trees are there in a row?

Answers.

(1) $\frac{7a^2}{12}+\frac{17b^2}{30}+\frac{10c^2}{9}$; $\frac{a^2}{6}-\frac{b^2}{15}-2c$. (2) $3x^3-4x^2+5x+7$. (3) (i.) $(3x+2)(2x-1)$; (ii.) $(a+3b+1)(a+3b+2)$; (iii.) $[3m-2(x-a)][3m+2(x-a)][9m^2+4(x-a)^2]$. (4) x^2+xy+y^2. (5) (i.) $\frac{4}{x-2}$; (ii.) 1. (6) (i.) 0; (ii.) $x=l$, $y=a+b$. (7) 63. (9) (i.) 1 or 3; (ii.) $x=6$ or -2, $y=2$ or -6. (10) 25.

Euclid.

(Books I. and II.)

(1) Define a right angle, an isosceles triangle, a rhombus and a gnomon.

(2) From a given point draw a straight line equal to a given straight line.

(3) If one side of a triangle be produced, the exterior angle so formed is greater than either of the interior opposite angles.

(4) Describe a parallelogram that shall be equal to a given triangle and have one of its angles equal to a given angle.

(5) If a straight line be divided into any two parts, the square on the whole line is equal to the sum of the squares on the two parts together with twice the rectangle contained by the two parts.

(6) If two triangles have two sides of the one equal to two sides of the other, each to each, and also the angles contained by these sides equal, then shall the triangles be equal in area, and their bases or third sides shall be equal, and the remaining angles shall be equal, each to each, namely, those to which the equal sides are opposite.

(7) In every triangle the square on the side subtending an acute angle is less than the squares on the sides containing that angle by twice the rectangle contained by either of these sides and the straight line intercepted between the perpendicular let fall on it from the opposite angle and the acute angle.

(8) Find a point in a given straight line equidistant from two given points outside that line.

(9) ABC is any triangle, and D is the middle point of BC. Show that if AD be less than BD the angle BAC is greater than a right angle.

(10) If a straight line be divided equally and unequally, the difference between the square on the line made up of the half and the line between the points of section and the square on half the line is equal to the rectangle contained by the whole line and the line between the points of section together with the square on the line between the points of section.

PRELIMINARY OXFORD LOCAL EXAMINATION, JULY, 1900.

Monthly Test Papers.—No. 3.

The increasing importance of the Preliminary Local Examinations of both Oxford and Cambridge has made it necessary to take into account the work of the teachers engaged in preparing pupils for these examinations. We have, consequently, had six test papers in each of the seven most important subjects drawn up by experienced teachers, and the third is printed this month. Copies of the questions in any subject dealt with can be obtained in a form suitable for distribution in class. Particulars will be found on page 114, in connection with the Junior Local Examination.

Arithmetic.

(1) Multiply four hundred and thirteen thousand and ninety-four by six hundred and seventy, expressing the product in words.

(2) Multiply 3 qrs. 12 lbs. 10 oz. by 140.

(3) How many half-sovereigns are there in 64101 threepences?

(4) Simplify the expressions:—

(i.) $3\frac{1}{3}+2\frac{2}{9}-4\frac{5}{6}$;

(ii.) $2\frac{2}{7}\times1\frac{7}{8}\div3\frac{3}{7}$.

(5) Multiply the sum of $3\frac{1}{4}$ and $4\frac{1}{4}$ by the difference between $3\frac{1}{7}$ and $2\frac{1}{2}$.

(6) Divide the sum of 1·342, ·014 and 13·41 by ·06.

(7) The railway fare for 121 miles is 10s. 1d.; what will be the fare for 247 miles at the same rate?

(8) Find, by Practice, the cost of 77 articles at 12s. 9d. each.

Answers.

(1) 276,772,980. (2) 6 tons, 3 qrs., 3 lbs., 8 oz. (3) 1,602 and 5s. 3d. (4) (i.) $\frac{13}{18}$; (ii.) $1\frac{1}{4}$. (5) $4\frac{3}{4}$. (6) 246·1. (7) £1 0s. 7d. (8) £49 1s. 9d.

New Testament—St. Luke.

(1) Give some account of the Oriental customs which Jesus referred to as wanting in Simon's reception of him?

(2) What four chief lessons was the Parable of the Sower designed to teach?

(3) Give an account of the only miracle which all the Evangelists record?

(4) "Even as Elias did." To what did the speakers refer? What did the presence of Elias signify at the Transfiguration?

(5) Write a short analysis of the Lord's Prayer. How does St. Luke's version differ from the others?

(6) Record some of the "signs" given in the Old Testament. In what sense was Jonas "a sign?"

(7) Explain and give the context—

"Live delicately."
"An alabaster box of ointment of spikenard."
"Five hundred pence."
"Mysteries of the Kingdom of God."
"Boanerges."
"The Son of Peace."

English History.

(1646—1660.)

Not more than **five** *questions to be attempted. Credit will be given for maps or other drawings to illustrate the answers; but not more than one-fifth of the time allotted to the paper should be devoted to such illustrations.*

(1) Give a short narrative of the events which took place in England between Charles I.'s surrender to the Scots and his death.

(2) What form of government was set up in England after the execution of King Charles? Describe the struggle of this government against its enemies, **either** (*a*) in Ireland, **or** (*b*) in Scotland, **or** (*c*) in the Netherlands.

(3) Write a full life of Oliver Cromwell.

(4) Write a short account of any real person (*e.g.*, Blake, Monk, or Milton) who lived during this period and whom you admire.

(5) Tell the story of **any one** of the following:—

(*a*) The Westminster Assembly.
(*b*) The Trial and Execution of Charles I.
(*c*) Cromwell's relations with his Parliaments.
(*d*) The Year of Anarchy (1659-1660).

(6) Write brief explanatory notes on the following topics, treating them in chronological order:—*Declaration of Breda, Instrument of Government, Pride's Purge, "The Other House," The Triers.*

English Grammar.

ADJECTIVES AND ADVERBS.

(1) Define the term Adverb. Into what classes may Adverbs be divided?

(2) Compare the following:—Well, good, little, many, sweetly, tender, splendid.

(3) How do you distinguish between Adjectives and Adverbs?

(4) Make sentences in which—
(*a*) The verb "make" is used actively with two objects.
(*b*) The verb "appoint" is used passively with two nominatives.
(*c*) An Infinitive mood is the object.
(*d*) "Close" is used once as an Adverb and once as an Adjective.
(*e*) "Very" is used once as an Adverb and once as an Adjective.

(5) Paraphrase: "My night fancies have long ceased to be afflictive. I confess an occasional nightmare; but I do not, as in early youth, keep a stud of them."

Robinson Crusoe.

(1) Describe Crusoe's journey from Lisbon to Toulouse. Why did he not go to England by land?

(2) What is your conception of Friday's character? Illustrate it by examples.

(3) What prevented Crusoe from returning to Brazil after his delivery from the island?

(4) Explain:—Checker-work, bill of exchange, Ave Marias, procurator-fiscal, Benamuckee, jerkin.

(5) What do you consider the most interesting part of Crusoe's adventures.

Geography.

EARTH PRODUCTS.—SOUTH AMERICA.

(1) Draw a map of South America north of the Equator: mark the boundaries of the various countries, and trace the course of the Amazon.

(2) What do you know of Caracas, Quito, Lima, Potosi, Valparaiso, Montevideo?

(3) What countries are the chief producers of timber, wine, raw cotton, sugar, indiarubber?

(4) Whence do we get our dairy products?

(5) What meat-foods do we get from other countries?

(6) What are the chief wool districts of England? Why is Australian wool finer than our own?

French.

(*Set Book, pp.* 24-39.)

(1) Translate into French:—
(*a*) The child is sleeping (*dormir*). Do not wake (*éveiller*) her.
(*b*) Henry the Eighth had six wives.
(*c*) Everyone likes him. He is very good to the poor.
(*d*) What was there on the table? Nothing.
(*e*) You and John will stay at home. Henry and I are going to the theatre.

(2) Write in full the imperfect indicative of *finir, faire, s'asseoir.* What exceptions are there to the rule that "the second person singular of French verbs ends in s"?

(3) Give the rule for the formation of the plural of nouns in French. Give three exceptions to this rule with examples. What is the plural of *ciel* and of *bétail*?

(4) Translate into English:—

Pendant qu'on retirait le pauvre marquis de la rivière, le Chat, s'approchant du carrosse, dit au roi que, dans le temps que son maître *se baignait*, il était venu des voleurs qui avaient emporté ses habits, quoiqu'il *eût* crié au voleur de toute sa force. Le drôle les avait cachés sous une grosse pierre. Le roi ordonna aussitôt aux officiers de *sa garde-robe* d'aller quérir un de ses plus beaux habits pour M. le marquis de Carabas.

(5) Write in full the present indicative of *se baignait.*
Parse *eût* in the above passage.
What is the plural of *sa garde-robe*?

(6) Translate into English:—
(*a*) C'était elle qui repassait le linge de ses sœurs et qui godronnait leurs manchettes.

(*b*) Vraiment, dit Mlle. Javotte, je suis de cet avis; prêter mon habit à un vilain Cucendron comme çela! *il faudrait* que je fusse bien *folle.*

What is the present indicative of *il faudrait* and the masculine of *folle*?

(*c*) Que je *voie* si elle ne me serait pas bonne!
Parse *voie* and write in full its future tense.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

The Teaching of English.

THE Master of Marlborough's paper on the "Teaching of English in Public Schools" cannot fail to be of interest to form-masters in secondary schools generally, and the Headmasters' Conference has conferred a boon on teachers of English by prompt publication of his paper. Undoubtedly there is a serious defect in the teaching of this subject, but surely the remedy lies with the Heads themselves. Not only the teaching of the mother tongue, but all teaching will remain ineffective so long as the work of schools is allowed to be controlled and inspired by external examining bodies. As Professor Miall puts it, "Some of us are so busy preparing pupils for examinations that we have not time to teach." Even when we are not actually "cramming" boys for these more or less useless tests, we cannot "teach" with the hobgoblin of Examination hovering in the next higher class.

To return to Mr. Bell's suggestions. "The time usually assigned to the teaching of English is not sufficient." True; and is not one reason to be found in the inordinate amount of time devoted to other subjects—notably, Latin? English boys have always commenced to learn Latin before they have understood the elements of their own language; is it not an open secret that even now they learn much of their English grammar through Latin? This ought not to be. Granted that Latin affords an excellent mental gymnasium for beginners, there are other languages that might be profitably taught instead of it. Why not teach Old English? Certainly it is not of so synthetic a nature as Latin, but it is, I think, evident that if a scheme such as that suggested is to be adopted, less time will have to be devoted, in most secondary schools, to the particular kind of training supplied by a synthetic language. Old English would require less, to say nothing of other points in its favour.

In the Prussian Oberrealschulen (which are Latin-less) at least five hours a week are given in the lowest classes to the exclusive teaching of the mother tongue; in the six "periods," which appear to be the average allotted to "English" in the corresponding forms of our secondary schools, we have to teach (?) grammar, history, geography, writing, composition, dictation, and, as often as not, Scripture, as separate subjects. Here, indeed, is room for co-ordination of studies.

In these Oberrealschulen the system of "reading-books" advocated by Mr. Bell is uniformly adopted, and no doubt such a method might, under a different curriculum, be used in England. But does he not lay too much stress on such considerations as style, idiom, rhetoric and the like? Mr. F. H. Dale, in "The Teaching of the Mother Tongue in Germany," says (p. 577, "Special Reports on Educational Subjects"): "It is interesting to notice that some German teachers are conscious of the insufficiency of an instruction which limits itself too strictly to the methods and style of composition, and tends to exact elaboration and fine writing at the expense of thought."

Nonconformist Grammar School, E. W. HURST.
Bishop's Stortford.

Proposition 13, Euclid, Book I.

THE following method of explaining Proposition 13 of Euclid's Book I. may be of interest to any of your readers who find difficulty in getting beginners to understand it:

CASE I.

CASE II.

(1) _/ - | + |/

(2) To each add /_

(3) Then _/ + /_ = _| + |/ + /_

(4) |_ = |/ + /_

(5) To each add |

(6) Then = | + |/ + /

(7) Therefore _/ + /_ = _| + |_ = 2 right angles.

SOMERSET BATEMAN.

The Endowed School, Watford,
February 8th, 1900.

Pensions for Assistant Masters.

WHEN the gates of the professions stand open to the gaze of the capable chooser, the vista through that of teaching appears little alluring. 'Tis a narrow track, and a dubious haze hangs about its termination. The prizes are for the few, the majority are destined to rank amongst the "great disappointed;" and there is a disproportion between the emoluments of chief and assistant—usually glaring, sometimes unjust—which spoils both the colour and tone of the prospect. The headmaster is in a position to make provision for old age, often the provision is made for him. The average assistant has all he can do to make ends meet, or at best his savings are inadequate to the exigencies of retirement. Such a spectacle acts as a powerful deterrent on the really proficient man, who, though the most likely to reach the high places of his profession, is equally likely to underrate his own powers of doing so. The result is that our secondary schools are, to a considerable extent, served by men who have taken up teaching *pro tem.*, a class not likely to bring to their work particularly lofty aims. Thus the short-sightedness of governing bodies and the negligence of the State are all too surely rewarded by defective educational results. In every profession efficiency will be found to bear a definite ratio to remuneration. All skilled labour demands adequate recompense. And teaching, where it is teaching indeed, is skilled labour of the highest order. But recompense is not adequate, unless it reward the toiler, not only for the work he has done, but for the rest he will need when his working days are over, or, to be more precise, when there is no longer a demand for his labour.

Though an immediate, universal pension scheme for assistant masters is out of the question, the governors of secondary schools, as well as the public which they serve, are under obligations to the assistant master which it is desirable they should more fully realise. Rich endowed schools, which make no provision for the superannuation of their staff, are guilty of neglecting the most patent requirements of justice and equity. For, to an extent unequalled in any other profession, it is a crime for a scholastic employé to be old—nay, even to be middle-aged. The late Dr. Dale, formulating what he took to be the logical principle on which many free churches discarded their ageing ministers, expressed it on one occasion thus: "We ought all to be shot at fifty." But in these days, when an exaggerated importance is attached to athleticism (regarded as a qualification for office), the assistant master at fifty is much more phenomenal than the minister of that age. To the credit of several of our great secondary schools, be it said, that generous provision is made by them for pensioning their old masters. Sometimes the pensioner is contributory to the superannuation fund, sometimes not. There is absolutely no reason why the system should not be extended to numerous other schools under the Charity Commissioners. There are wealthy foundations where the funds, instead of being applied in a manner equitable both to the teacher and the taught, are appropriated with needless generosity to the latter. Affluent citizens often pay nominal fees of from three to four guineas per annum for a high-class education for their sons, while the master who gives the vigour of his manhood to an arduous profession is miserably underpaid and, in middle life, often cast adrift without prospect; for his skilled labour is of so specialised a character that he has little chance of finding a market for it outside the schoolroom. It should be laid down as a fundamental part of every endowed school scheme that no surplus funds should be utilised to reduce scholars' fees or to found scholarships, except in a direct proportion to the remuneration and superannuation of the staff. It is only necessary to enlighten the public on these matters, and public opinion would be largely on the side of the schoolmaster. Might not the Assistant Masters' Association procure a return of all schools possessing a pension scheme? Details need not be published, but governing bodies desiring particulars might be supplied with them. Where possible, proprietary and private schools of secondary standing should be assisted in the same way.

Any reform which adds to the security of the assistant master must improve his status, and to improve his status is to attract a large number of the best men to teaching. Parliament alone can effect a reform which shall be adequate, but meanwhile existing authorities can do much, and every step in the desired direction must tend to elevate the profession; for, notwithstanding its higher forms of attraction, it needs also the lower inducement of a competence—a competence which either shall itself be, or shall involve, a reasonable provision for retirement and old age.

London, N. ALFRED THOMPSON.

University of London Senatorial Election.

THE new Senate of the reconstituted University of London is to be appointed in May next, and as sixteen members, or about one-third of the whole, are assigned to Convocation for election, there is now a good opportunity for securing an improved representation of the interests of secondary education in the governing body of the University. A committee has been appointed by the Incorporated Association of Headmasters, to which representatives of the various associations working for secondary education have been co-opted, and whose object is to secure such representation. As it will be important to have the active co-operation of all London graduates who are in sympathy with the object of the committee, you will render us great service by making known the following facts about the election:—

Only "registered graduates"—*i.e.*, members of Convocation—will be able to vote.

The election will be by means of voting papers, transmissible by post.

Six senators are to be elected by Arts graduates, six by Science, two by Medicine, and one each by Law and Music.

All Doctors and Masters are immediately entitled to become registered graduates; but Bachelors in Arts and Science must have graduated three years, and those in Laws and Medicine two years.

The fee for registration is 5s., or a life composition of one pound, which must be sent to the Registrar.

Only those who have registered by the end of March will be allowed to vote in the next Senatorial Election.

Winscombe, H. CARTER (*Hon. Sec.*).
Addiscombe Grove,
Croydon.

Education in Jamaica.

IN a recent number of your interesting and helpful educational magazine, I find two paragraphs of the "Current History" devoted to these islands, which you describe as "becoming a burden" to the British Crown. You say truly that their prosperity in the commercial world has considerably decreased; but would it be of any interest to point out that in education this island, at least, has made rapid strides? There is a good system of elementary education, carried out, according to a well-planned code, by teachers trained in recognised training colleges, and the Jamaica Union of Teachers does much to promote the advance of knowledge. Higher education, too, is not neglected; both in Kingston and the smaller towns "high" schools, conducted after the fashion of English schools of the same name, flourish, while there are numerous preparatory private schools and kindergartens. Pupils are sent up to several centres for Cambridge Locals and College of Preceptors examinations, and scholarships are offered upon the results. As a notable fact, it may be mentioned that the head boy of last year's Cambridge List of Seniors was a Jamaican, educated at a large boys' school in the island.

I have only recently come out from England, and the modern and splendid organisation of schools out here has quite astonished me. Our educational periodicals give us plenty of information about education in foreign lands, but they rarely touch upon the question of English school-work in the colonies. I think it would be interesting if correspondents from among our colleagues all over the British Empire would sometimes send a few items of interest to some educational paper, and so bring colonial schools in touch with those at home.

AN ENGLISH TEACHER IN JAMAICA.

November 26th, 1899.

The Pronunciation of Latin.

THE practice at thirteen well-known secondary schools is shown in the following table, which I have compiled from a recent article by Mr. Joseph Deedy:—

(1) means *a* sounded .... as in *father*.
(2) ,, ,, ,, ... ,, *fate*.
(3) ,, *c* and *g* before *e* and *i* ,, *critic*, *gift*.
(4) ,, ,, ,, ,, ,, ,, ,, *city*, *gipsy*.
(5) ,, *c* before *e* and *i* ... ,, *violoncello*.

Charterhouse	2, 4
Cheltenham	2, 3
Christ Church, Oxford	(unsettled)
Christ's Hospital	1, 3
Downside College, Bath	1, 4, 5
Dulwich	2, 3, 4
Eton	2, 4
Maynooth	1, 4 (modified Italian)
Rugby	1, 2, 3
Stonyhurst	1, 4
Westminster	2 (various)
Whitgift, Croydon	2, 4
Winchester	1, 4

Mr. Deedy brings up what to me seem unanswerable arguments for (1) and (3). Latin has no *k*; *c* served its purpose; many words beginning with *ce* and *ci* are almost identical with the Greek from which they were taken, as *cetus*, *ketos*; *circus*, *kirkos*; *cera*, *keros*; *coelum*, *koilos*. In the verb *dico*, *dicis*, *dicit*, the first form has the letter hard; logically the others would have it so too; and, further, it must continue so to explain the perfect *dixi* (diksi). Note, similarly, *virgo*, *virginis*; *rex*, *regis*; *dux*, *ducis*; *lego*, *legis*, *lexi*, *lectum*. There are many other arguments. As regards the vowels, the results of comparisons with other languages are all in favour of the "Roman values" as in *father*, *reign*, &c.

Let me take this opportunity of saying that I shall be happy to send, post paid, to any reader of the SCHOOL WORLD interested in this matter a copy of my little book of tables of "The Sounds of Speech," issued in connection with "International Phonography," the current (15th) edition of "The Oxford Shorthand."

PERCY E. KINGSFORD.

"Excelsior," Dover,
February 10th, 1900.

PRIZE COMPETITION.

Result of No. 10.

WE offered last month two prizes of books, one for the best list of ten recently published books of fiction suitable for a boy's library and one for a similar list of books for a girl's library. The best lists were to be considered those containing the largest number of the books most frequently mentioned in the replies received. A careful examination of the choice of books made by the competitors would lead us to suppose that schoolmasters and schoolmistresses do not read books of fiction intended for their pupils, and that the comparatively small number of our readers who are interested in the literature which engages the attention of boys and girls in their leisure moments have very different tastes and standards.

It has, we are sorry to say, been impossible to award the prize for a list of books intended for a girl's library. Points of similarity in the lists are almost wanting, and no list is sufficiently good or representative to justify the award of a prize.

The lists of boy's books are better, but by no means satisfactory. There is a similar want of unanimity, though in a smaller degree. Many excellent books which have come before our notice are conspicuous by their absence. Adopting the standard of a popular vote, we award the prize to:—

Mrs. Schlich,
Cooper's Hill Villas,
Englefield Green,
Surrey,

whose list is as follows:—

(1) "The Jungle Book" (Rudyard Kipling). (2) "The Second Jungle Book" (Rudyard Kipling). (3) "Stalky & Co." (Rudyard Kipling). (4) "Sir Toady Lion" (S. R. Crockett). (5) "The Human Boy" (Edwin Phillpotts). (6) "Treasure Island" (R. Stevenson). (7) "King Solomon's Mines" (Rider Haggard). (8) "A Gentleman of France" (Stanley J. Weyman). (9) "The Castle Inn" (Stanley J. Weyman). (10) "Robbery Under Arms" (Rolf Boldrewood).

The list received from Mrs. Fearenside, of Cambridge, is placed second, though in several respects her choice is a better

OUR CHESS COLUMN.

No 15.

THE answers to last month's questions are as follows:—

(1) Because 11 Q—R5 followed by 12 Q—R7 mate. If B—B4, R—B3, &c.

(2) Mate in three by 20 Q—Kt6 (ch.), 20 K x Kt, 21 P—Kt3 (ch.), 21 K—R6, 22 Q—R5 mate.

The names of successful competitors will be found below; *their marks count in the competition for the set of Staunton chessmen which will be awarded to the highest scorer at the end of the year.* I hope all will persevere in their efforts to secure this valuable prize. I have just received a letter from N. P. Wood, last year's winner, expressing his appreciation of the set which he obtained. Staunton men deserve a good board; personally, I prefer wooden ones, and not the ordinary folding variety. By the way, why do not more boys make their own chess-boards? In the holidays I saw several that were exhibited at the Educational Exhibition—they had been made in school workshops, and were quite as good as any that could be bough at a moderate price.

The British Chess Company write asking me to make public the fact that they are willing to supply, *gratis*, a wall sheet of the laws of chess. Here is a chance for school secretaries; address, "The British Chess Company, Stroud, Glos." It is astonishing how little is known of the laws of the game by most chess-players.

I hope the "Pawn Puzzles" will meet with the approval of the winners named below; the powers of pawns are remarkable, and anyone who studies this little book carefully must derive great benefit from it. I am offering more copies of the work as prizes this month.

Our Inter-School Correspondence Tourney is still being played. The results at the time of going to press are:—

Division A.

Manchester Grammar School. Played 2; won 2; points 2.

New College, Harrogate. Played 2; lost 2; points 0.

Cheltenham College. None of the four games yet finished.

Division B.

Nonconformist Grammar School, Bishops Stortford. Played 4; lost 4; points 0.

Merchant Taylors' School, London. Played 4; won 3; lost 1; points 3.

Trowbridge High School. Played 4; won 3; lost 1; points 3.

Here is the game for competition this month.

	White.		Black.
1.	P—K4.	1.	P—K4.
2.	Kt—KB3.	2.	Kt—QB3.
3.	B—B4	3.	B—B4.
4.	P—B3.	4.	Kt—B3.
5.	P—Q4.	5.	P x P.
6.	P—K5.	6.	P—Q4.
7.	B—QKt5.	7.	Kt—K5.
8.	P x P.	8.	B—Kt3.
9.	Kt—B3.	9.	Castles.
10.	B x Kt.	10.	P x B.
11.	B—K3.	11.	B—R3.
12.	Q—Bsq.	12.	P—KB4.
13.	Kt—KKt5.	13.	P—B5.
14.	B x P.	14.	R x B.
15.	Kt—K6	15.	R x P.
16.	Kt x Q.	16.	B—R4.
17.	Q—K3.	17.	R x QKtP.
18.	R—QBsq.	18.	QR—Ktsq.
19.	Kt x BP.	19.	B x Kt (Ch.).
20.	R x B.	20.	R—Kt8 (Ch.).
21.	R—QBsq.	21.	QR—Kt7.
22.	Kt—K7 (Ch.).	22.	K—B2.
23.	Kt x P.		Black wins.

Which is the quickest way by which he may do so?

Rules.

1.—Solutions to be sent on post cards.

2.—Give name, date, age and address. (Age limit, 21.)

3.—Solutions to be received on or before March 12th.

4.—Address:

The Chess Editor,
The School World,
St. Martin's Street,
London, W.C.

Result of February Competition.

"Fifty Pawn Puzzles" has been sent to:—

F. H. Leonard (4 marks); F. G. M. Beck (4); D. G. Wearing (3); C. Mellows (3); B. Goulding (3); N. B. Dick (3); A. V. Poyser (3); T. A. Poulter (3); L. Shillingford (3); E. H. Kettle (3): B. de la Mothe; J. A. Spranger (3).

As we go to press 20 postcards have been received from Friends' School, Saffron Walden; the senders receive three marks each.

Answers to Correspondents.

P. J. Wood.—Thanks for your letter.

F. G. M. Beck.—Have secured you an opponent for correspondence games, and hope you will enjoy them.

CALENDAR.

[*Items for the April Calendar must be received by March 17th,* 1900.]

March, 1900

Thursday, 1st.—Send in names and fees for Entrance Examination at Newnham College, Cambridge.

Return forms to Secretary of L.L.A. Scheme, St. Andrew's.

Return forms for Associated Board of R.A.M. and R.C.M. Local Centre Examination.

Friday, 2nd.—Return forms for Bursaries at Glasgow University.

Candidates not in Science and Art Department classes to apply to Local Secretary for admission to evening examinations of the Science and Art Department.

Monday, 5th.—Free Public Lecture on German Literature by Professor Priebsch, at University College, W.C., 8.30 p.m.

Tuesday, 6th.—Professional Preliminary Examination of College of Preceptors begins.

Wednesday, 7th.—Return forms for Exams. of Society of Arts.

Free Public Lecture on French Literature by Professor Lallemand, at University College, W.C., 8.30 p.m.

Tuesday, 13th.—Send in names for Schoolmasters' Diploma at Edinburgh University.

Return forms for Technological Exams. of City and Guilds of London Institute.

Scholarship Exams. in (*a*) Natural Science, (*b*) History, at Keble College, Oxford.

Wednesday, 14th.—Trial of Voices for Musical Scholarships, Christ Church Cathedral School, Oxford.

Thursday, 15th.—Scholarship Examination begins in Classics and Mathematics at Magdalene College, Cambridge.

Examination for Entrance Scholarships begins at Selwyn College, Cambridge.

Friday, 16th.—Scholarship Examination in Classics and Mathematics begins at Corpus Christi College, Cambridge.

Tuesday, 20th.—Scholarship Examination in Classics begins at Lincoln College, and in History at Exeter and Lincoln Colleges, Oxford.

Wednesday, 21st.—Free Public Lecture on French Literature by Professor Lallemand, at University College, W.C., 8.30 p.m.

Monday, 26th.—Examinations of Society of Arts begin.

Tuesday, 27th.—Entrance Scholarship Examination at Rossall School begins.

Return forms for Preliminary Examination of Pharmaceutical Society.

Wednesday, 28th.—Scholarship Exam. begins at Harrow School.

Thursday, 29th.—Scholarship Examination at St. Bees Grammar School.

The School World.

A Monthly Magazine of Educational Work and Progress.

Editorial and Publishing Offices,
ST. MARTIN'S STREET, LONDON, W.C.

Contributions and General Correspondence should be sent to the Editors.

Business Letters and Advertisements should be addressed to the Publishers.

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The Editors will be glad to consider suitable articles, which, if not accepted, will be returned when the postage is prepaid.

All contributions must be accompanied by the name and address of the author, though not necessarily for publication.

The School World

A Monthly Magazine of Educational Work and Progress.

No. 16. APRIL, 1900. SIXPENCE.

THE BOARD OF EDUCATION.

Its Work and Relations with the Chief Grades of Secondary Schools.

THE Board of Education Act comes into operation on April 1st, and much speculation has already taken place among governors of schools and teachers as to the probable effect the inauguration of the new Board will have upon the work of the particular schools with which they are individually closely related. The general public are, perhaps, too much occupied with more exciting events to give other than a passing consideration to educational occurrences, but everyone concerned in intellectual progress is profoundly interested in the future relations to one another, and to the central authority, of the many kinds of schools taking part in the work of secondary education. Of course very much depends upon the men who have been entrusted with the administration of the Act, and, as in every other important advance, there will doubtless be a gradual development. A healthy growth must be encouraged, and no attempt made to present secondary schools with a formulated and detailed scheme of education which will have to be rigidly followed, whether the masters consider it good or bad. It is impossible yet to estimate the influence the Act will have upon educational welfare, but it is none the less interesting to study the opinions of representative teachers as to what could usefully engage the early attention of the Board, and what should be the aim of the central authority in dealing with questions which have been so much discussed during recent years that they are familiar to most teachers.

It is desirable that the hopes and fears of those whose work will be affected by the Board should be as widely known as possible, and be given careful consideration both by Members of Parliament and by the general body of teachers. To assist these objects, we have invited representative members of the chief associations of schoolmasters to deal very briefly with the prospective work of the Board of Education from the standpoint of the class of schools with which they are especially familiar, and we trust that the questions which are brought into prominence by a comparison of the opinions here presented will receive the attention their importance deserves.

Inspection and Registration.

By Rev. T. W. Sharpe, C.B., M.A.

Principal of Queen's College, London.
Late Senior Chief Inspector for the Education Department.

The Board of Education, which enters on April 1st upon its arduous task, the creation of a co-ordinated system of secondary education, will benefit by the long postponement of reform, as churches benefit which have escaped the restorations of fifty years ago. At that time the schools for the lower middle-class were generally devoid of true ideas of education; they possessed no higher aim than that of pleasing the parents of their scholars, and satisfied them by such devices as a parcel of fair copies of corrected exercises in spotless note-books, or tricks of mental arithmetic and elaborate recitations on the annual parade-day. The British lower-middle-class parent does not yet appreciate the value of a sound education, but he demands to be shown the bearing of the teaching upon the future of the scholar in its business aspect. It may be hoped that the Board of Education may supply a lead in the right direction by giving its high authority to a more liberal course of instruction so forcibly that no parent or teacher or examiner may be able to resist it.

In some respects the task of discriminating between a bad or passable sanitary state of buildings and a bad or passable teacher is less difficult than it was fifty years ago. The advance of sanitary science furnishes simple tests which have superseded the only ancient test, the inspector's nose, while the multiplication of public examinations of many shades and degrees has enabled most heads of private schools to exhibit some fair test of intellectual attainment. A review of schools for the lower middle-class will be less perplexing than the review of elementary schools fifty years ago; these could show very few specimens of sanitary buildings or qualified teachers. The lower secondary schools will, for the most part, have profited by the postponement, and will be able to display sanitary living rooms and some public recognition of their teachers.

I have assumed that a large majority of secondary schools will invite inspection, that inspectors will be appointed who have themselves been successful teachers of secondary schools, and that their duties will be limited to private counsel, for some years at least.

It may be assumed also that no elaborate system of classification of school buildings as "good," "fair," or "moderate" will be adopted, and that all teachers will be entered on a common equality of registration.

The Education Department has made a few blunders, and among the most unworkable of its mistakes was the elaborate classification of teachers in nine stages, made up of three grades, each grade containing three divisions. A quinquennial revision of the grade of certificate enabled the holders of the certificate to rise by one or two or three divisions according to the decision of the inspector. A still more disastrous measure, an elaborate classification of schools by ticketing them as "excellent," "good," "fair," or relegating them to an unnamed lower gulf, only resulted in stirring up wrathful passions, envy, hatred and malice, until a general sense of fancied and real injustice compelled the abandonment of the system.

I allude to these two blunders to point the lesson, that any attempt at an elaborate classification into "good," "fair" and "moderate" will be neither politic nor just in the case of the suitability of school buildings. Nor, again, would it be wise to compile a higher or lower register of teachers.

The construction of a general register, which should comprise teachers of all grades, from the elementary to the masters of schools sending up the majority of the scholars to the Universities, would obviate many heart-burnings and some injustice; *e.g.*, it would be desirable to avoid such invidious questions as to the relative merit of a Goverment elementary certificate or the ordinary pass B.A. examination.

A registration list need contain for teaching purposes only two columns, one referring to intellectual attainments attested by some public examination, the other stating the number of years already spent in school work; the rest, so far as application for any school post is concerned, might safely be left to testimonials of merit from competent judges.

These two considerations, the sanitary condition of buildings and the qualifications of teachers, must be left to the direct action of the Board. But among many other points requiring consideration two principal questions should be determined in the first instance by local advisers, such as local authorities, University Boards, and councils of teachers, but subject to the final sanction of the Board, viz., the curricula of study suitable to the various classes of schools and the inspection tests of a school's success. The history of elementary schools in England is a strong testimony against the interference of a central bureau through politicians and doctrinaires. Till the year 1870 our elementary system was progressing steadily, when it was suddenly checked by the Procrustean Code, which enacted that elementary schools of all classes and scholars of all capacities should undergo the same rigid tests of examination. No allowance was made for variations required by the needs of the locality or by the more or less defective or backward condition of certain scholars. Again, the Charity Commissioners have prescribed in their schemes special courses of study, so that a school at the East End of London may include in its course Latin and German, the merest elements of which cannot be mastered by the scholars before the exigencies of their future life compel them to leave school. The local authorities may render good service by conferring with trustees and teachers as to the right course of study, bearing in mind the length of school stay and the future avocations of the scholars.

As to the second point, the Board might leave the initiative to the Universities to suggest the most suitable form of inspection and examination. The Universities have worked much good in raising the character of the teaching throughout middle-class schools by the style of their written examinations; but no examination of the school or the individual scholar can be satisfactory unless the written exercises are judged by the light of a *viva-voce* questioning. Moreover, no examination by an outsider who views his subject from his own peculiar point of view, and has no opportunity of observing the character of the teaching, can do justice to a school.

The great blot on the local examinations is the monotonous grooviness of the questions in English literature and in languages generally. The teacher spends most of his time in stopping up likely gaps of linguistic peculiarities, obsolete forms of grammar, dark and doubtful allusions; the beauty of the language and the artistic skill of the author receive much less attention; the weary text-book, generally the Cambridge edition of one of Shakespeare's plays, becomes nauseous to the scholar and the teacher. The Universities Joint Board and the Scotch system of leaving certificates are working great good by the greater prominence given to unprepared pieces of translation in foreign languages and previously unseen passages of English literature, regarding more the scholar's power of entering into the spirit of an author than the language in which he expresses his paraphrase.

I have only touched upon some of the main points with which the Board of Education will be called upon to deal, and much will depend upon the Consultative Board, which will include women among its members; but there can be no fear that the Board will err through want of consideration for the feelings of the teachers or through deficiency of good advice.

THE GREAT PUBLIC SCHOOLS.

By the Rev. H. W. Moss, M.A.
Headmaster of Shrewsbury School.
President of the Headmasters' Conference.

I am requested to state briefly what, in my opinion, will be the effect of the Board of Education Act on the public, or non-local, schools. I doubt whether the Act will have any immediate or direct effect upon this class of schools. Rightly or wrongly—I think rightly—the authorities of these schools consider that, with their governing bodies, drawn from different sources and representative of many diverse sentiments and interests, with their elaborate statutes and regulations, environed, too, as they are with an atmosphere of bracing publicity, they do not stand in any obvious need of the inspection provided by the Act. But the headmasters of many of the non-local schools, including some of the oldest and most famous, have done their best to forward the passing of the Act, and desire to do whatever is in their power to secure its effective operation. Undoubtedly they would not feel justified in diminishing the usefulness of their own schools in the quest of a doctrinaire uniformity, nor are they prepared to involve themselves needlessly in a new entanglement of inspections and examinations; but they are painfully conscious of the chaos which now reigns in large departments of secondary education, and they do not wish to hold aloof from the application of well-considered remedies for unquestionable defects. If only some reasonable system could replace the present disorder, the non-local schools ought to take their proper place in that system. But to many the Act appears so imperfect, and the forces which it calls into being seem so insufficient for the vast educational needs of the nation, that the non-local schools at present can only wait and watch. At present the war absorbs the public attention, and it is almost impossible to attract a living interest to any other subject. But it is to be hoped that this obstacle will not long bar the way. When the Government is able to introduce its Local Authorities Bill, we shall all have a firmer footing both for speculation and (I trust) for substantial educational progress.

GRAMMAR AND PROPRIETARY SCHOOLS.

By Dr. R. P. Scott, M.A.

Joint Hon.-Secretary of the Incorporated Association of Headmasters.

I am asked to state my opinion "as to the probable influence which the Board of Education is likely to exert upon the different branches of secondary education, and as to what task the Board is likely to undertake first;" and further, as to how "the great bulk of public secondary schools —those, that is, which the Incorporated Association of Headmasters represent—will be affected, and what will be the early relation of the new Board with them."

As to what is likely to be actually done by the Board of Education in the first months of its legal existence, I have no means of forming a confident opinion. Almost everything depends on decisions not yet disclosed, which will have to be made by those in authority. On the other hand, it is not difficult to indicate certain initial steps which, if well advised, the new Board might take, and which, if taken, would gradually bring it to a position of authority in the educational world never enjoyed by the existing Department.

Its first task should be the choice of a representative Consultative Committee, in which the public and the teaching profession would have confidence. Very much depends on the tact and knowledge shown in the selection of this Consultative Committee, and on the discretion subsequently displayed in the arrangements made for its successful working. The Consultative Committee of the Board of Education is a new feature in English educational administration. It may become either a most valuable adjunct to the Board, or something far from valuable, according to the degree of statesmanship shown by those who at this juncture are charged with the duty of planning and guiding its operations.

This body will, under the Act, begin its labours by working out some plan for the gradual formation of a register of teachers—a task difficult enough in itself, but rendered doubly difficult by the fact that as yet we possess no positive knowledge of the existing provision for secondary education—that is, as to the *quality* of the work of schools which are at present roughly classified as secondary. It is notorious that many of these schools are merely non-public-elementary schools, and should properly be denominated either "primary" or "preparatory-secondary." In order, therefore, that the public may be able to take a synoptic view of the educational field, an Inspection of all schools, other than public elementary schools, ought at once to be conducted, and it should be concluded within the space of a scholastic year. This would involve a discriminating choice as to the provisional staff of inspectors, a well-thought-out plan of operations, wise guidance during their progress, and lastly a careful tabulation and comparison of results. The survey would cost perhaps £60,000, the part of expense might be borne by county and borough councils, and would be cheap at the price, for it would pave the way for the passing of a Local Authority Bill as nothing else would, and it would call together a body of skilled appraisers of educational work, out of which the permanent staff of inspectors and sub-inspectors could with confidence be formed. If, however, the Education Office shrinks from the comprehensiveness of this task, it will begin to inspect schools one by one at such charge as it may fix. The Welsh Board, for example, fixes the charge to each school at half-a-crown per pupil. In this manner the field would no doubt be surveyed in time. But one grave disadvantage of this meagre and timid policy would be that those schools which most need Inspection would stand off until the Board declares its intention to compile a register of efficient secondary schools and until the great Public Schools have declared individually their willingness to submit, and have actually submitted, to the tests of efficiency as regards sanitation of buildings, teaching ability of staff and actual educational results.

It is, however, fairly certain that, quite apart from the Local Authority of the future, existing Technical Education Authorities can, and are likely to, do much to accelerate the slow steps of the Board. Local grants to public secondary schools will, doubtless, in future be made on condition that all such aided schools be inspected by, or under the regulations of, the Board of Education, and that the results of such inspection be satisfactory. If, as is more than probable, these conditions be generally made, the public secondary schools represented on the Headmasters' Association are likely to form that class of secondary schools which will be first affected by the operations of the Act, and it cannot be doubted that, on the whole, the results of such inspection will be both stimulating to these schools and beneficial to the public.

TECHNICAL INSTRUCTION COMMITTEES.

By William Hewitt, B.Sc.

Chairman of the Association of Directors and Organising Secretaries for Technical and Secondary Education.

The Technical Instruction Committees have been brought into relationship with the several departments of the Government exercising educational functions—the Science and Art Department, the Education Department, the Board of Agriculture and the Charity Commissioners, and it will therefore be an advantage to them to know that in the future they will have to deal only with one authority, under whose control the various sections of educational work will be co-ordinated, and whose position in regard to any one section will be adopted with full knowledge and understanding of its bearing upon the rest, which in the past has not always been the case.

Many of these committees have given assistance in some form or other to the public secondary schools in their districts, as is well shown by the very full report contained in the *Record of Technical and Secondary Education* for January, 1900. They have also in many cases taken steps to ascertain the amount and distribution of the present provision for secondary education in their areas, and this information will be useful in connection with any inquiries into this matter which the Board of Education, in concert with local authorities, may think it desirable to institute. The inspection of secondary schools by inspectors appointed by the Board, or by organisations recognised by it for the purpose, will prove of great advantage to the Technical Instruction Committees, some of whom have themselves hitherto arranged for the special inspection of schools in receipt of their grants. Such inspection will not only enable the committees to learn something of the standing of the particular schools, but, as it will no doubt be undertaken in a sympathetic manner, will afford both the schools and the committees valuable information, and suggestions as to further developments.

If the Board of Education is able to arrange a satisfactory leaving certificate examination for certain types of schools, *e.g.*, secondary and higher grade or higher primary schools, it will not only do something to set a standard and aim for many of the pupils, but such certificates will serve as evidence of the necessary preliminary training desirable for students to receive before entering upon specialised courses of instruction in technical or commercial schools. The Technical Instruction Committees recognise how important it is that students for their higher technical classes should have received a sound general education, and for that reason have desired to maintain as close a connection as possible between the administration of technical and general secondary education.

The relations of the work of evening continuation classes to that of technical schools and classes is important, and some confusion has arisen in certain cases through such schools working under two distinct departments—the Education Department and the Science and Art Department. Different types of schools are now included under the name Evening Continuation School and work under one and the same code; and some differentiation into groups with more definite scope and aim would be an educational advantage and should receive early attention.

Higher grade schools or higher primary schools have admittedly done excellent work, and the unfortunate dispute as to their position in the scheme of administration is one which should be at once settled, and the co-ordination of such schools with the elementary schools, on the one hand, and technical schools on the other, considered with a view to the fullest advantage being taken of the training which their best students receive for an industrial career. The recognition of the necessity for several distinct types of higher grade schools to meet the special needs of different districts should be pressed.

With regard to special science, art and technological work, it is to be hoped that the action of the new Board will be to give greater latitude and freedom to recognised responsible local authorities in methods of work and administrative details, and to allow of some adaptation of courses and schemes to varying local conditions.

PRIVATE SCHOOLS.

By the Rev. J. O. Bevan, M.A., F.S.A.

Formerly President of the Private Schools Association.

Before this magazine is published the steps which have been taken by the Government and their Departmental Committee to constitute the Board of Education and to order its mode of procedure may have enabled us to realise certain broad lines of activity.

The personal equation always counts for much, and it may be helpful to reflect upon the *personnel* of the new Board. (*Vide* Act I., 2, 3.) The principal point to be noted is that the familiar faces of the Duke of Devonshire and Sir John Gorst are destined to emerge upon this new world.

The administrators of the Act will be the Chief Secretary, Sir George Kekewich, and three Assistant Secretaries, viz., Mr. Tucker, Sir W. Abney, and a third—already virtually chosen—

appointed with special reference to the requirements of secondary education.

Section 4 provides that it shall be lawful for Her Majesty, by Order, to establish a Consultative Committee for the purposes of framing a Register of Teachers and of advising the Board. "It shall be lawful." That is the technical term used in reference to the Crown, but it introduces an element of uncertainty. If this Committee be not constituted—as some are inclined to prophesy—it is still possible that the Board might feel itself called upon, under the Act, to take up the work of registration. The success of this scheme would depend upon the good-will and self-interest of individual teachers. There appear to be no power of compulsion and no penal consequences attaching to a refusal to register.

The Queen's Speech referred to the introduction of a Bill to provide for the creation of Local Authorities. Our forecast of its provisions is that county and county borough councils will be granted a dominant influence in the composition of these bodies, although we hope and believe that teachers and other persons conversant with problems of secondary education will, by co-option, find a place thereupon.

The uncertainty attending the composition of these committees, their powers and their monetary resources, will prevent the Board from taking up, on its own account, any duties beyond those absolutely laid upon it by the Act of 1899. When the Bill becomes law, special functions will be delegated to the authorities created, and the Board and these important bodies will be enabled to work together.

Three points, however, may be noted here:—(*a*) The Science and Art Department have arranged to accept local organisations as responsible for the science and art instruction within their respective areas, and it is clear that such bodies will have a vested interest when the promised Bill is under discussion. (*b*) The Board can inspect schools supplying secondary education by its own officers or by means of any university or other organisation. Under this clause, the Bill might enormously increase the power of an organisation already recognised under clause VII. of the Science and Art Regulations. (*c*) Again, in clause III., section 2, of the Act of 1899, we find that every county council may pay the expenses of inspecting, under this section, any school within the county.

From (*b*) and (*c*) we gather that the inspection and examination of schools may be carried out under the new Act even before the projected measure for the completion of the organisation of secondary education comes into being. The extension brought about under the latter scheme will have reference to the investigation (by the newly-organised authorities) of the wants of the community, the tabulation and appraisement of existing agencies, and the supply of defects by the establishment and maintenance of schools out of public funds.

In the preparation of this paper our thoughts have been directed to the prospects of the different classes of private schools. The school preparatory to the public schools, and the high-class boarding school, have nothing to fear. Presumably, they will have no special difficulty in satisfying the authority as to the sanitary condition of their premises and the sufficiency and efficiency of their staff.

Even these enquiries will not be pressed home to-day or to-morrow. The Board has an immense task before it; it has to arrange for dealing with thousands of schools, and it has to create and train a staff of inspectors.

The question of the provision and allocation of funds for the organisation of secondary education is all-important. What will be done, and the manner of its doing, must depend upon the material resources at the disposal of the Department and the local authorities.

We repeat that, unless they think fit, private teachers need not trouble to register their names, to place their schools under examination (apart from hygienic *inspection*), or to take any note of these Acts. The provisions are permissive, not compulsory. We also repeat that the changes foreshadowed will be but of slow accomplishment. As a preliminary many enquiries must be formulated, many suggestions made, much red tape displayed.

The grasp of the departmental hand will, however, tighten with time—the cordon will be drawn ever closer. Provisions that are now optional will become binding—"may" will be transformed into "must."

HIGHER GRADE SCHOOLS.

By WILLIAM DYCHE, B.A.

President of Association of Headmasters of Higher Grade Schools and Schools of Science.

IN my opinion, the Board of Education will find itself compelled to deal with the Higher Grade School question at a very early date. The fact that these schools are partly under the Elementary and partly under the Science and Art sub-division of the Board, and that in one and the same building two schools exist, neither of which has any official cognizance of the other, has caused an administrative tangle which will be quite intolerable when the two previously independent departments become united under one head. More departmental discomfort would arise from letting the present state of things alone than from altering it; therefore, if for this reason only, something will almost certainly be done to define the position of higher grade schools.

I should think that any action taken by the Board will be along the line of least resistance. The higher grade school is now accepted as a necessity even by those who think it a necessary evil. The Education Department and the Science and Art Department have each favoured the development of these schools, and have too accurate a knowledge of their efficiency and of the political troubles which in urban constituencies would arise as a consequence of any serious attack upon them, to advise or to permit the new Board to adopt any measures for their abolition or even for their repression. On the other hand, the influence of the power which has latterly on one or two occasions wrecked the beneficent schemes of the Education Department for the improvement of elementary education will, together with the financial strain resulting from the war, probably prove strong enough to prevent anything being done to develop or extend higher grade schools.

I should imagine that existing schools will be left in the enjoyment of their present grants, but that the Board will probably do what it can to prevent the founding of new schools. One question will have to be definitely settled and settled at once, namely, are higher grade schools to continue under the government of two departments of the Board, or are they to be relegated to one department, and if so, to which? I think it will be found that the settlement involving the fewest complications will be to put them under the Elementary Department, because they are in their nature an organic part of the elementary school system. To cut them off from the elementary system would kill them in a few years, but meantime the elementary hydra would only grow another head, which would be the same thing under another name.

THE STUDY OF "AS YOU LIKE IT."

By J. A. NICKLIN, B.A.
Assistant-Master in Liverpool College.

I.—General Conception of the Play.

THE atmosphere of "As You Like It" is quite different from that of the historical plays, different from the great tragedies, different from comedies of real life like "The Merry Wives of Windsor." We are in the world of romance, where things do not proceed by ordinary rules, and where neither great forces, great passions, nor even boisterous reality is allowed to enter. The key-note to the play is, then, to be heard in Shakespeare's description of the life in the forest of Arden, where men "fleet the time carelessly away" and imitate "the old Robin Hood of England." He has taken the liberty of romance to dispense with the hard necessity of cause and effect, and to avoid all that would be painful; he does not wish for the licence of romance to be extravagant and unnatural. Associated with the feeling which suggests a world where the unpleasantnesses of prosaic fact are forbidden is the affectionate remembrance of the restfulness and simplicity of the country. "As You Like It" is full of the colour of English rural life, but it is seen somewhat distantly, through the golden haze of a recollection which only dwells on the brighter side. Shakespeare is beginning to tire of the feverish activity of the capital, and looks back to Stratford with a regretful fondness. This is a mood which admits a certain degree of melancholy, and we consequently find a running commentary of mild disillusion supplied to the story. But it is only the commentary of a man who hugs his discontent rather than suffers from it. Shakespeare will not here probe into the deep wounds of humanity, as in "Macbeth" or "Lear," any more than he will represent the violent passions, or the sudden catastrophes, or even the coarse and laughable accidents of life. There is certainly this note of melancholy, but it is a luxurious melancholy. Lastly, because we are in the world of romance, we are in a world where love is dominant. It is the glamour rather than the passion of love which Shakespeare represents. Boy and girl or man and woman fall in love at sight, spontaneously and lightly. There is no reason sought or expressed for the infatuation. It would be heresy here to explain the workings of the love-god, as where Othello describes the first beginnings of Desdemona's tenderness. The words of Marlowe, put in the mouth of one of the lovers, might have been uttered by any of them, even, with a touch of self-ridicule, by the motley fool Touchstone:

> He never loved that loved not at first sight.

It is the love of careless, healthy youth, never crossed by the shadow of death, nor indeed by any great shadow, and only suffering as much disappointment as will give zest to the general good fortune which is to crown the conclusion.

A comparison between the play and Lodge's story "Rosalynde," which suggested it, will bring into prominence some of these features of Shakespeare's intention. "Rosalynde" is also a story of a younger son unjustly treated by his elder brother, of a prince banished by the usurper, of the friendship of the usurper's daughter for the daughter of the rightful prince; the wrestling match, the escape to the forest, the love-story and the happy ending are all in the play as in the novel. But the points of difference are vital. To take small matters first: in the story the elder brother has robbed the younger, in addition to ill-treatment. Shakespeare discards this, because the offender is to be admitted into grace at the last. It is Shakespeare's idea to make the usurper and the lawful duke brothers. This is to give their case a resemblance to that of Orlando and Oliver, so that Rosalynde's sympathies at once go out to Orlando, and also to give a more natural complexion to Celia's renunciation of her father for her friend. The novel is very dilatory in action; much time is taken up with the altercations of Orlando—he is Rosader in the original—with Saladin, the prototype of Oliver. (It may be noticed that Shakespeare re-christened them after

Charlemagne's paladins, with an allusion to the proverb.) Shakespeare, as Mr. Verity points out, "gets his characters into the forest as rapidly as possible." In the novel the wicked brother rescues the two princesses from an attack of robbers. That is to prepare for the happy ending and the double marriage, but Shakespeare refuses the device, because he does not wish to disturb the repose of the forest by the invasion of violence. For the same reason, he will not have the usurper to be defeated and killed, but the desired conclusion must be brought about by repentance. Especially significant is the invention of three entirely new characters—Audrey, Touchstone and Jaques. They mark the very clearly defined distinction between the entirely artificial conditions of the novel and the human atmosphere of the play.

The characters of "As You Like It" are real, though they are not brought into contact with all the hard reality of life. The forest of Arden is no conventional Arden, but rural England seen with the eyes of a poet. Touchstone gives the sub-acid criticism of the action as it unfolds itself. Jaques introduces a far deeper element of poetry and of melancholy than could exist with the conventional treatment of romance. In the character of Audrey one sees how Shakespeare, even when he was wholly concerned with the choice of bright and pleasant colours, would not lose his hold on plain and common elements which underlie all human nature. Audrey and William are to the rest what Bottom and Quince are to the lovers and the fairies in "Midsummer Night's Dream," the nurse to Romeo and Juliet, Launce Gobbo to Bassanio and Portia. They are not concessions to the popular taste for foolery. They are essential to the preservation of human proportions, the soil from which the flowers of fancy and imagination draw their nourishment.

Here, then, are a number of broad lines of thought to be driven through the play in a first or second reading, before we come to detailed examination of the characters.

(1) It is a romantic story, taking the liberties which romance allows itself with hard facts. A slight but obvious example is to be found in the lioness and the green and gilded snake which inhabit the forest.

(2) It is a glorification of country life, and pre-eminently of English country life. The forest is said to be in France, and some species of its fauna are tropical, but the rustics who live in it were born and bred in the Warwickshire Arden.

(3) The liberties which Shakespeare has taken with probability are all in the interests of cheerful and happy presentation. He does not wish to pile up wonders, but only to avoid dwelling on what is painful.

(4) The mood which prompts the poet to linger affectionately on recollections of the simple life of the country is a mood tinged with melancholy, and one which tends to shoot little arrows of sarcasm at the artificial life in which the poet was himself involved.

(5) This melancholy is not very deep seated. The character in which it is personified is treated with a kind of half-contemptuous pity and tolerance by his companions.

(6) Shakespeare has written "As You Like It" in that detached spirit which prompts a man to laugh at himself. Touchstone's parody of Jaques' cynicism has some such aim.

(7) As a romantic story, the piece is chiefly concerned with an aspect of love. It is clear that this will not be a very serious aspect. It is the love of youth; it is love never very seriously crossed; and it is love which never rises to passion, for the heroics of Orlando are not to be taken too literally. Above all, it is the love which savours of illusion, the "love at sight."

(8) The various pairs of lovers are intended as contrasts, offering a kind of ironical commentary on the weaknesses which they could not see in themselves. Celia offers the remonstrance of common sense to Rosalind in love, only to fall an unaccountable victim herself at last. The rustic coquetry of Phebe is made to look ridiculous by the frankness of the lady of rank, while Rosalind's reproaches to the country beauty are not devoid of unconscious satire on her own womanly jealousy of good looks in another woman. Audrey is the entirely stolid creature, not necessarily confined to the lower classes, who regards love, if she gives any attention to the thing, as a superfluous accessory to the business of matrimony. Touchstone, in whom is concentrated the self-mocking spirit of the play—a spirit not strong enough to be bitter; only astringent and tonic—has not enough respect in his mental constitution to feel the sentiment, and too much acuteness not to discover the vulnerable points in it, while a full share of original perversity leads him into the folly with his eyes open.

(9) We thus find every shade of love, or imitation of love, represented, except passionate love.

In the "Tales from Shakespeare," by Charles and Mary Lamb, the romantic part of the story is developed with great delicacy and insight. The satirical element in the play has, of course, been ignored. The young student might with advantage, after reading through the play once or twice, compare the impression thus gathered with that conveyed by Mary Lamb's sketch. Several unnoticed touches will thus be brought to light. One or two of these illuminating hints may be mentioned here. For instance, there is the reason discovered for the vivid interest which Rosalind felt in Orlando's condition; there is the pretty observation that "the faithful friendship Celia had shown in accompanying Rosalind so many weary miles made the new brother, in recompense for this true love, exert a cheerful spirit, as if he were indeed Ganymede, the rustic and stout-hearted brother of the gentle village maiden, Aliena"; there is the defence, even prettier, of Rosalind for not revealing her identity earlier to her father; and there is the appreciation of the mood in Orlando which made him take pleasure in the mock courtship of Ganymede.

ON THE USE OF THE VOICE IN TEACHING.

By PATRICK KIRWAN.

WHEN elocution was looked upon as the art of mouthing and false declamation, it was very rightly avoided; but now that teachers are finding it impossible, without training, to cope with the requirements of voice, the necessity of making a methodical study of the production and use of the voice in speaking is apparent.

When the London School Board found that teacher's pharyngitis was becoming common, it was thought time to act, and specialists were called in. In dealing with many of these cases, it struck me that if a few hints had been given and observed beforehand, a great deal of the evil would have been avoided. As there may be many others who are, either consciously or unconsciously, on the wrong path, we here give in THE SCHOOL WORLD a few words in the shape of practical hints, both as to the proper control of voice and breath, and as to what to avoid in the daily use of the voice in speech.

EXPRESSIVE READING AND SPEAKING.

Some faults are common in the use of voice. One of these is the habit of inexpressive reading and speaking. I mean by "inexpressive" a want of distribution of emphasis, and consequent fatigue of voice through lack of variety, and resulting absence of rest. In every sentence there are certain words indispensable to the expression of the idea. These are to be thrown in high light by setting them in contrast to their surroundings in a phrase; and this contrast is generally, though not always, obtained by centralising force of utterance on them, using all subsidiary words and phrases as resting-places of voice. By careful attention to phrasing, we not only increase the meaning, but rest the voice. From both points of view the words in a sentence should be gathered round the one or two leading words, as iron filings round the poles of a magnet. This is one method of resting the voice, which, from want of thought, is not generally practised.

Another, and connected with this, is the want of due observance of pause. Pauses are to the tones of the voice in a sentence what black is to the scheme of colour in a picture. But the observance of due length and balance of pauses is not only an æsthetic consideration, nor of mere intellectual interest. When voice is properly produced, these places of frequent pause become indispensable as points of recuperation in the taking of breath. Phrase your sentences by a distribution of force in emphasis, and phrase the whole of your speech by attention to due observance and balance of pauses. The faults of pronouncing all words on one level of force, and of running on sentences and parts of sentences without separation, are connected with expression. Nevertheless, they help to a large extent in the eventual destruction of the voice, as they give no rest in voice attack, and no time for renewal of breath. The mechanical fault causing them is that the voice is taken on the uncontrolled, expiring breath. This will be referred to, and explained, later.

CONTROL OF VOICE.

Further prominent faults to which I would call attention are connected directly with the mechanism of speaking, and not indirectly through want of expression, as in the previous cases. One is a habit, common to many, of pushing the voice forward, so to speak—that is to say, of speaking with a consciousness of a forward and upward strain, which, as we shall see later, is directly contrary to what ought to be were the voice properly produced. It is especially when loudness is required that this strain becomes most marked, producing congestion in the upper vocal parts—chiefly in the pharynx—and giving expression to a sound that is necessarily harsh and unmusical. Notice the average man who wants to make his voice heard by somebody who is at a distance from him. He blows his voice forward, as if by mere force of his forward propulsion of breath he could reach the man's ear, straining his voice in the effort of a shout. This is a habit very easily dropped into by teachers, and, in course of time, it must ruin the voice. The effort made in strength of accent, or in force of tone, must not feel as though we were pushing the voice forward, but rather the contrary, as holding it within ourselves, gaining full resonance, as will be presently explained. Accent is obtained by a blow, and not a push.

THE FUNCTION OF CONSONANTS.

Laying lengthy stress on consonants is another method commonly employed by the average speaker of injuring the voice. This is often the cause of stammering. The stammerer may be one who has begun by laying all the weight of his voice, not on the accented vowels, as it should be, but on the consonants preceding or following them. As long as he was dealing with consonants capable of being prolonged, such as *M*, or *N*, *F*, *S*, *H*, &c., the words would come, according to his perception, all right; but when he came to the other class of consonant, incapable of being prolonged, such as *C*, *P*, *B*, *T*, *D*, *G*—hard,—*K*, &c., he would try to prolong those also—urged to it by the weight of his voice on them—and the result would be a repetition, or, in other words, a stammer. When stammering is not produced, the result of injured voice nevertheless remains.

Faulty use of consonants seems to result from want of clear conception as to their real function. It is forgotten that they are of no value as musical sounds, which they are not, but as methods of attack of tones. All force of accent should be on tones, and not on consonants. If the position of the mouth for the production of each consonant be examined, we shall find in every case some kind of obstruction to tone. These obstructions must be removed, or, in other words, the position of the mouth altered, before tone can be properly produced. If we try and force tone through any of these obstructions—proceeding from the closed throat to the compressed lips—which form the positions necessary for the consonants, the result must necessarily be an unmusical tone, and a wrongly forced voice. But the preliminary obstruction improves the brilliancy of the tone which follows and conquers it.

The Junction of Consonants and Vowels.

In every word there is a dwelling, or poise, of voice immediately after the accent. With the untrained speaker this poise is frequently placed on the consonant, but with the artistic use of voice always on the vowel. The initial consonant precedes the force of voice, which comes on the succeeding tone and dies away before the concluding consonant is added. Thus the voice is never displaced, or the quality of tone destroyed, by the obstructive consonants, which are now clear and distinct from the full tone as heard on the accent. It is a curious thing that this method of joining consonants and vowels is not pointed out, as far as I know, in any of our modern text-books, and seems to be known to but few. The early plain-chant composers paid particular attention to it under the name of "liquescance," and in song, where the poise of the voice is longer, the method is more clearly seen than in speaking. Yet in speech the same system should be observed: thus, "A rose by any other name would smell as sweet" should be pronounced "A ro—se by a—ny o—ther na—me would sme—ll as swee—t," not "A ros—e by an—y oth—er nam—e would smell—as sweet—."

The difference between the two methods of joining vowels and consonants may be particularly well exemplified in verse, where the pleasing effect depends to such a large extent upon the harmonious arrangement of vowel tones. Take, for instance, the opening lines of some such musical arrangement of tones as we may find in Shelley's "Sensitive Plant," and listen to the effect of the poise on each accented tone:—

A se—nsitive pla—nt in a ga—rden grew—,
And the you—ng winds fe—d it with si—lver dew,
And it o—pened its fa—n-like lea—ves to the li—ght,
And clo—sed them benea—th the ki—sses of ni—ght.

Production of Vowel Tones.

The consideration of dwelling upon tone leads us to the question of voice production, for, of course, it is worse than useless to dwell upon tones improperly produced. Voice production is, to a great extent, a muscular exercise, and right voice use depends upon a knowledge of which muscles to hold in tension and which relaxed. Evils, such as "teacher's sore throat," &c., usually arise from placing strain on the muscles of the part of the vocal apparatus which should be relaxed.

In the teaching of voice, a great deal too much attention has been drawn to the larynx, with the result that the pupil, thinking hard of his larynx, and wondering whether it is properly adjusted, places strain in its immediate neighbourhood, and this eventually brings about pharyngitis or laryngitis. The larynx really is adjusted directly in answer to the dictates of the brain, and it is only by the effect produced that we can check the position and tension of the vocal cords. But if we fix our thoughts, not on the place of initiation of voice, but on the chambers of resonance, we at once have something definite to work upon. Let us, therefore, briefly examine the requisites of tone and resonance, and how we may satisfy them.

If we take a tuning fork, and strike one of the prongs, the vibratory movement of tone is set up in the fork, and communicates itself to the surrounding air. If we wish to prolong the sound, it is evident that the succeeding blows must be simply sufficient to re-start the movement as before. Should the blows come so continuously as to constitute a push, the equality of the vibrations would be destroyed, and hence the musical quality of the sound. Further, if we take an air container of a certain size, and place it in close proximity to the sounding fork, the note emitted by the fork is taken up and resonated by the air in the container, and the resultant tone, being louder and fuller, is more distinctly heard in a large space. Were this resonance chamber to be of continually altering size and shape, and were the air in it to emerge with uncontrolled force against the sounding body, not only would the tone be injured, but also the resonance.

Again, if instead of a tuning fork, we had taken a body which gave a complex tone, such as a bell, we know that, upon placing resonance chambers of different sizes close to it, we could pick out and strengthen certain harmonics in the original tone, and thus alter the quality.

Summing up all these considerations, we come to the conclusion of our requirements for vocal tone: (1) something capable of vibration against which the blow is struck, (2) some power with which to strike the blow, (3) some resonance chamber to give power and quality to the whole note, (4) a series of further resonance chambers by the application of which the quality of tone may be altered. Let us next see how we may, in our bodies, best satisfy these conditions.

An examination of the process of breathing shows us the following story of the management of breath. In a deep inspiration, the air is taken in through the nose, which is the natural inlet to the windpipe—not the mouth, as some people think—and comes down through the nasal channels, and behind the soft palate, through the pharynx, larynx, and windpipe, into the bronchi, and thence into the air cells of the lungs. These air-cells, dilating, expand, and require an extra enlargement of chest for their greater bulk. To meet this requirement, the ribs are lifted, carrying the breast-bone forward in the action, and the sides outward. The dome-shaped, muscular floor of the chest is flattened by the side pull of the ribs and forward movement of the breast-bone, and it is also pulled downwards by the tension of the abdominal muscles beneath it. When the lungs have been thus filled, the chest floor is allowed to rise, pushing the lungs which rest on it upwards, and thus squeezing the air-cells and expelling the contained air. The chest at the same time adjusts itself to the emptying lungs, the sides falling in, and the breast-bone sinking. In voice production, the first part of this operation—the inspiration—is taken fully, and the second part—the expiration—severely controlled.

It is evident that at the end of a deep inspiration we have the largest size of chest, with the greatest quantity of contained air. If this position were maintained, and a blow of air sent upwards by a momentary jerk of the chest floor, such as is given in sneezing or coughing or any sudden expiratory effort, the puff of air would be sent up the windpipe until it met with an obstruction, against which it would strike a blow. The vocal cords stretched across the top of the windpipe, and nearly meeting, form this obstruction, and the blow of air thus sent up against them is what happens in the accents of speech.

In the vocal cords we satisfy our first condition of something capable of vibration against which the blow is struck. In the puff of air forcibly sent upwards we satisfy the second condition of a power with which to strike the blow. In the held chest we satisfy the third condition of a resonance chamber, because the air in the windpipe, bronchi, and the air-cells of the lungs, is set vibrating in sympathy with the cords, and, if the hand be applied to the chest or back of a person singing, this vibration may be felt.

Above the vibrating cords we have a series of resonance chambers, in the ventricles of the larynx, the mouth, and the nasal channels, thus completing the whole area of resonance from the top of the nose to the floor of the chest. By movement of the tongue we can, without forming an obstruction, modify the size and shape of the mouth, and thus satisfy our fourth condition of a series of resonance chambers, by the application of which the quality of tone may be altered. It is thus that our vowel tones are formed.

Besides the deep inspiration, we can, with distended chest, still take a further breath. This is taken through the nose and mouth, is expended on the accents of speech, and is renewed at every grammatical and rhetorical pause. This is what was meant at the outset by the statement that the pauses in speech are the opportunities of recuperation.

The usual faults in the production of tone arise through some obstruction being placed in the way of the necessary free vibration—either through a closed mouth, or constricted pharynx—or through improperly controlled breath. The result is pharyngitis or laryngitis. The jaw must be dropped easily, and without restraint, almost of its own weight, as that of a dead person would do. The last top breath of which we spoke should be taken fully and deeply, with a feeling resembling the inspiration of a yawn, the ribs should never be allowed to fall during the production of tone, and the chest resonance should never quite vanish, even in those tones where nasal resonance is most prominent.

From the above considerations the following simple exercise in voice production is deduced.

(*a*) Take a deep breath through the nostrils, while counting three seconds, with the fingers and thumbs slightly pinching the lower ribs at the sides.

(*b*) Hold this breath, with the ribs immovable, while you count a further three seconds.

(*c*) Take a last breath in through the nose and mouth—the first part of a yawn—and, on the return of this breath, produce, with open mouth, the broad vowel *a*—as in "father." Listen for a clear attack, without any preliminary click of the throat, and for the chest resonance. The other vowel tones may be formed from this.

It is difficult to go through accurate vocal exercises without the presence of a teacher, but, if the few hints contained in this article are properly followed, all tendency to injury of voice through wrong usage is removed.

EXPERIMENTAL CHEMISTRY.

A Course of Work based on the Junior Local Examinations of Oxford and Cambridge Universities.

By Prof. J. B. Coleman, A.R.C.S., F.I.C.
South-Western Polytechnic, Chelsea.

III.—Composition of Water—Hydrogen—Natural Waters—Distillation—Solution.

The subject is treated in such a manner as to give the *teacher* working details of the experiments suitable for the course. The experiments, unless otherwise stated, are to be performed by the student. If the experiment is starred (*), it should either be performed by the teacher in the lecture room, or done by the student under the *personal* supervision of the teacher.

(19) Composition of Water.

Chemically pure water differs from air in being a chemical compound, whereas air is a mixture (article I., 3). Air, therefore, possesses properties intermediate between those of its constituent gases, nitrogen and oxygen, but water differs entirely in its properties from its component gases.

The composition of water is not very readily shown in a simple manner, but probably the most convenient way is to decompose water by the electric current.

* *Expt.* 28.—Procure a funnel[1] of about 5 inches in diameter, and cut off the stem close to the shoulder. Fit into the neck of

the funnel a rubber cork, through which passes two platinum wires. (Fig. 11.) To do this make two longitudinal slits in the cork with a wet knife, and place the wires in the slits so made. The cork will then be water-tight when placed in the stem of the funnel. Place the cork securely in the funnel, and add water acidified with a few drops of sulphuric acid until the funnel is nearly full. Invert over each of the wires a test-tube full of water, and pass the electric current from 4 Grove cells or from any other convenient source. As soon as the current passes bubbles of gas will be seen to be given off from the wires, which will collect in the test-tubes.[1] It will be noticed that one gas is given off twice as rapidly as the other, since the volume of gas collected in one tube is twice that collected in the other. When a sufficient quantity of gas has collected, remove the test-tube containing the smaller quantity of gas by means of the thumb, invert the tube and test with a glowing splint. The glowing splint will inflame, showing the gas to be oxygen (article II., 12.). Remove the other tube, and test with a lighted taper; the gas will burn with a pale flame, it being an inflammable gas called hydrogen. This gas is described later on (21, 22.). It will therefore be seen that water contains two dissimilar gases, oxygen and hydrogen, combined in the proportion of one volume of oxygen to two volumes of hydrogen. (See also paragraph 23.)

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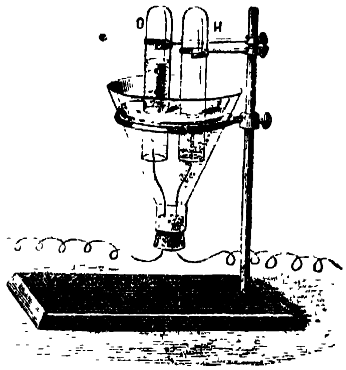
[1] A dialyser of 5 inches diameter may replace the funnel with advantage, or a bottle cut off by means of a hot wire about 5 inches from the neck will serve the same purpose.



of water by electric

(20) HYDROGEN FROM WATER.

Many metals will take up the oxygen from water and liberate hydrogen. The metal sodium is a convenient one for this purpose. When thrown upon water it liberates hydrogen very energetically, but if alloyed with mercury its action is moderated.

Expt. 29.—Place a little mercury in a mortar, and add to it a small piece of freshly-cut sodium, press the sodium down with the pestle until the sodium combines with the mercury. Continue this operation until the "amalgam" is pasty. Now partly fill a dish with water and pour in it a little of the sodium amalgam. Bubbles of gas will be seen to rise. Quickly invert over the amalgam an inverted test-tube filled with water, and collect the gas given off (Fig. 12). When the tube is half full of gas remove the tube, placing the thumb over its mouth, invert it and apply a light. The gas will ignite and burn with a pale flame tinged with yellow, due to sodium vapour.

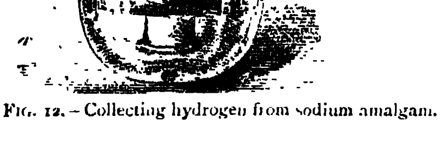


FIG. 12.—Collecting hydrogen from sodium amalgam.

(21) PREPARATION AND COLLECTION OF HYDROGEN.

When hydrogen is required in larger quantities, it is most readily prepared from the action of hydrochloric acid upon zinc.

Expt. 30.—Fit a two-necked Woulffe's bottle, or an ordinary wide-mouthed bottle, with a thistle funnel and bent delivery-tube as shown in Fig. 13.

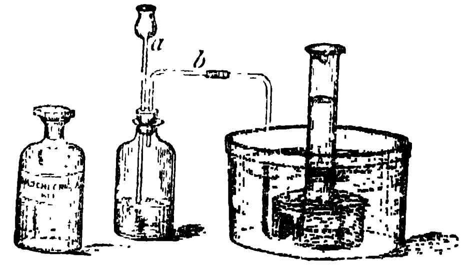


FIG. 13.—Preparation and collection of hydrogen.

Ascertain that the joints are air-tight by closing the thistle funnel with the wetted hand and blowing through the delivery-tube; no air should be heard to escape. Remove the cork and place in the bottle sufficient granulated zinc to cover the bottom. Replace the cork, and then add enough water to cover the zinc and the end of the delivery tube. Add hydrochloric acid by means of the thistle funnel. Place the end of the delivery tube under water contained in a stoneware pan, and when a few minutes have elapsed, so as to allow the gas to displace the air, collect three jars as described in paragraph 13, article II.

(22) PROPERTIES OF HYDROGEN.

Expt. 31.—Hold a jar of the gas mouth downwards, remove the plate and insert a lighted taper. The gas will burn with a pale flame, but will extinguish the taper.

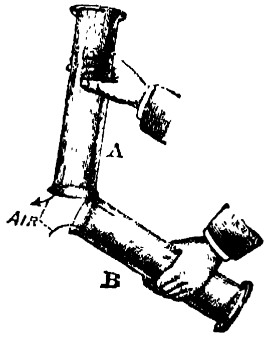


FIG. —Hydrogen lighter than air.

Expt. 32.—Hold an empty jar (Fig. 14) (A) with its mouth downwards, and gradually turn a jar of hydrogen from a similar position until it assumes the position shown in Fig. 14 (B), taking care that the mouth of the jar (B) remains under that of the jar (A). Finally, turn (B) until it is vertical. Apply a light to the upper jar; the gas will ignite with a slight explosion, showing that hydrogen has

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[1] **If the gases in the above experiment come off slowly, owing to the surface of the platinum being small, the inside portion of the wires may be wound into a** spiral, or **a** strip of platinum foil may be attached in the **following manner**:—Place a strip of platinum foil 1¼ in. × ¼ in. on a piece of **fire clay.** Lay the free end of the **wire** upon it, and impinge the flame of a **foot blow-pipe** so as to heat the foil and wire to bright redness. Next **smartly tap** both the wire and foil with a hammer, when the wire will *weld* **on to the foil**

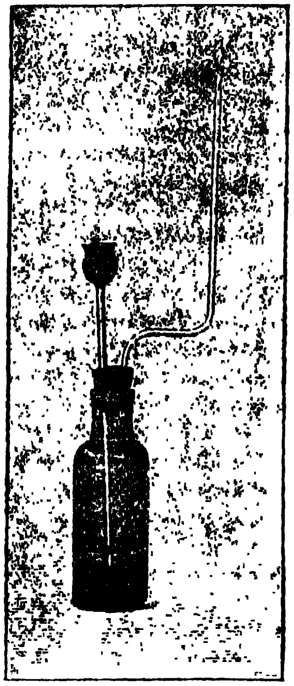


Fig. 15.—To collect hydrogen by upward displacement.

been poured *upwards*, it being lighter than air. Since the gas burnt quietly in experiment 31, a mixture of air and hydrogen is explosive.

As hydrogen is lighter than air, it may be collected by the displacement of air as follows:

Expt. 33.—Detach the delivery tube from the apparatus used for the collection of hydrogen (Fig. 13), and replace it by a tube bent twice at right angles as shown in Fig. 15. As soon as the gas has been freely given off for a few minutes, place an inverted gas jar over the end of the tube so that the tube reaches to the top of the jar. Now remove the jar, keeping it inverted, and apply a light; the gas will burn in the usual way. Notice the deposition of moisture in the jar.

(23) Hydrogen forms Water when burnt in Air.

In the last experiment it was noticed that when hydrogen was burnt in a *dry* jar dew was deposited on the inside of the vessel. This is due to the hydrogen combining with the active constituent of the air (oxygen), thus showing the composition of the water. If suitable means are employed, a greater quantity of water may be collected and its properties examined.

Expt. 34.—Add a little more hydrochloric to the hydrogen apparatus (Fig. 15), and since a mixture of hydrogen and air is explosive, test if the gas is free from air as follows:—Place over the delivery tube an inverted test-tube, and so collect a tube full of gas. Take the tube *away* from the apparatus and apply a light; if the gas burns quietly up the tube, the gas if free from air; if, however, it burns with a squeaking noise it is mixed with air, when further trials should be made until the gas burns quietly. *To prevent accidents in any case, cover the bottle with a duster before igniting the hydrogen.* Now light the issuing hydrogen, and hold over the jet a dry beaker. In a short time moisture in the form of small drops will form.

To make this experiment more conclusive, the gas may be dried by passing it through a calcium chloride drying-tube before testing, as described in the next experiment.

Expt. 35.—A large amount of water may be collected by arranging a better system of condensing the water formed. This method is shown in Fig. 16. The hydrogen is generated in the bottle (*f*), and is then dried by passing it through the tube (*e*) filled with small pieces of fused calcium chloride. The gas then passes through the bent tube (*g*), and is burnt at (*h*). The flame at (*h*) impinges against the bulb (*a*) of a retort which is kept cold by means of a stream of water from the tap (*c*). The water passes through the tubulure of the retort by the tube (*b*), and flows away into the sink by the neck. The water is collected as it condenses by a small glass beaker. When a sufficient quantity of liquid has been collected, it may be shown to be water by its possessing neither taste nor smell, by its boiling and freezing points, and by the fact that dried copper sulphate is immediately turned blue when moistened with it.

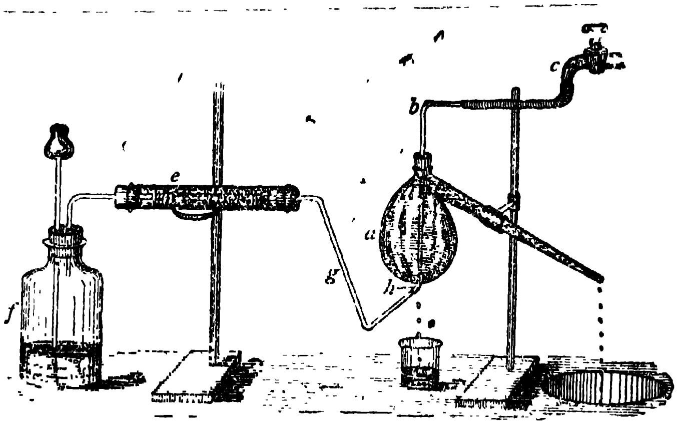


Fig. 16.—Collection of water from burning hydrogen.

(24) Natural Waters.

Water is never found perfectly pure in nature. The purest form of natural water is rain-water, but that contains some substances in solution. Spring, river and well waters invariably contain dissolved solids which will vary with the variety of rock and soil with which they have been in contact. The amount of dissolved solids in natural waters can be readily estimated as follows:—

Expt. 36.—Weigh a small porcelain dish and carefully measure into it 50 c.c. of tap-water. Place the dish on wire-gauze, and carefully drive off all the water by means of a Bunsen flame as described in article I., expt. 7, or heat on an improvised water-bath as shown in Fig. 17. In the latter case the dish is placed over a beaker partly filled with water, in which a few small pieces of paper have been placed to prevent bumping. The

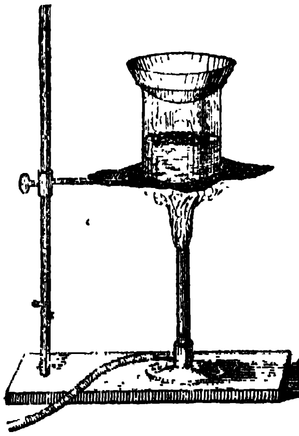


Fig. 17.—Evaporation over boiling water

temperature in this case being below the boiling point of the liquid, loss is prevented, especially in the later stages of the process.

When the whole of the water has disappeared, allow to cool, and weigh the clean, dry dish. The increase of weight will give the amount of solid matter in 50 c.c. of tap-water.

(25) PURIFICATION OF SPRING AND RIVER WATERS BY DISTILLATION.

Since it was seen in the last experiments that the dissolved matter was left behind where water was driven off as steam, therefore it follows that if the steam is suitably condensed pure water will be obtained. This operation goes on naturally in the production of rain. Water is evaporated by the sun's heat and condensed again by cold to form rain.

Expt. 37.—Half fill an eight-ounce retort with tap-water. Support the retort on a retort-stand and push the end of the retort into a small clean flask partly immersed in water as shown in Fig. 18.

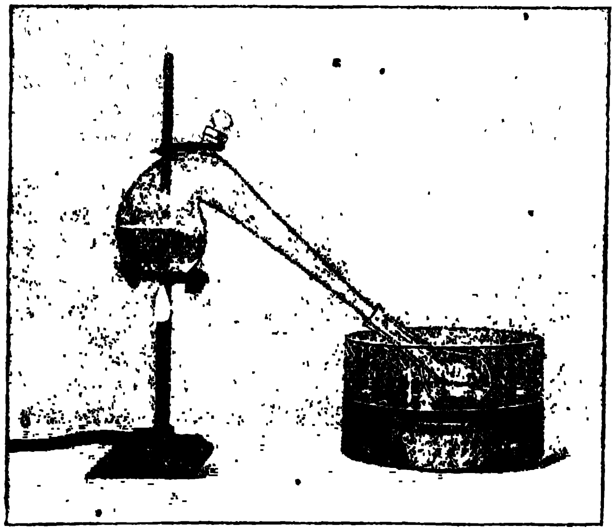


FIG. 18.—Distillation of water.

Now carefully boil the water; steam will pass into the flask, which will be condensed to *distilled water*. Throw away the first portion of the water condensed and collect a quantity for future experiments.

Show by evaporation that no residue is left on evaporation (compare expt. 36).

(26) HARD AND SOFT WATERS.

The amount of dissolved solids varies greatly in different natural waters. Waters that contain much dissolved matter usually lather with difficulty when treated with soap. These "hard" waters almost invariably contain calcium and magnesium salts, which throw down the soap as "curd." The sodium chloride (common salt) contained in sea-water has also a similar effect.

Expt. 38.—Dissolve a shaving of soap in a little *distilled* water, add a few drops of this solution to half a test-tube of tap-water, and shake. Probably no lather will be produced, but a turbidity will form due to the separation of soap. Continue adding the soap solution and shaking until a lather forms. Notice the amount of soap solution required.

Now repeat the experiment, using an equal quantity of distilled water. A lather will be produced at once and no turbidity will be produced. It is, therefore, evident that, when soap is used with hard water, a portion of the soap is wasted.

Expt. 39.—Half fill a ten-ounce flask with tap-water and boil vigorously for 15 minutes. Pour out the water and examine the interior of the flask; a thin white film will be seen on the inside of the flask. This is due to chalk (calcium carbonate) having been deposited. The fur which forms inside tea-kettles and boilers is due to this substance. The hardness that can be boiled out is known as *temporary* hardness. An explanation of this will be given later on. Reserve the water in the flask for expt. 41.

Expt. 40.—The presence of calcium salts in water may be ascertained by the addition of ammonium oxalate solution.

Place a little tap-water and distilled water in separate test tubes, add to each a few drops of ammonium oxalate solution, and allow to stand a short time. The tap-water will become turbid owing to the presence of calcium salts, but the distilled water will remain clear.

Expt. 41.—Add to a little of the clear liquid from expt. 39 a few drops of ammonium oxalate solution. The liquid will become turbid, showing that the *whole* of the calcium salts has not been boiled out. It may also be shown that a lather is not readily given with soap solution. The hardness that cannot be boiled out is called *permanent* hardness, and is mainly due to calcium sulphate (gypsum).

(27) SOFTENING OF WATER.

For domestic and manufacturing purposes water is frequently "softened" by the precipitation of the calcium and magnesium salts.

Temporary hardness, due to calcium and magnesium salts, is removed by lime (calcium hydrate) and caustic soda (sodium hydrate). Permanent hardness, due to calcium and magnesium salts, is removed by sodium carbonate.

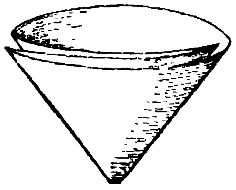
Expt. 42.—Try the effect of calcium hydrate, sodium hydrate and sodium carbonate solutions, in the order named, upon separate samples of hard water.

(28) SOLUTION.

Many solid substances when mixed with a liquid *dissolve*, *i.e.*, the solid disappears and the *solution* remains transparent. A solid which dissolves in a liquid is said to be *soluble* in that liquid, and a solid which does not dissolve is said to be *insoluble*. Water is the most universal *solvent*, but some substances are insoluble in water, and others only slightly so. To ascertain whether a substance is soluble it is best acted upon in the state of powder, also the solvent usually acts more rapidly when heated.

Ascertain the solubility of calcium sulphate as follows:—

Expt. 43.—Place 100 c.c. of distilled water in a seven-ounce beaker and add powdered calcium sulphate (plaster of Paris) until the liquid appears milky on stirring. Heat for a short time just short of boiling. Allow the liquid to cool, and filter off the undissolved solid as follows:—Measure a glass funnel from the rim to the stem. Select a circular filter paper, the radius of which is slightly less than this measurement: fold the paper into a semi-circle, and then again at right angles into a quadrant; then open it out into the shape shown in Fig. 19. Now press the folded filter into the dry funnel, moisten with water, and the filter is ready for use.



Folded filter-paper.

Place the funnel in the neck of a small *dry* flask and pour the turbid liquid into the filter by means of a glass rod (Fig. 20).

If the liquid runs through turbid, return it to the filter until it runs through quite clear. When the whole of the liquid has run through, take out 50 c.c. and transfer it to a small, weighed porcelain dish. Evaporate the whole to dryness (expt. 36), and, when cold, weigh the dish and contents. The increase of weight observed will give the amount of calcium sulphate dissolved in 50 c.c. of solution.

Filtering.

(29) Action of Liquids upon Substances.

A very useful series of exercises is to study the action of various liquids upon solid substances.

The substance should be in the form of powder, and treated with different liquids, such as water, dilute hydrochloric, nitric and sulphuric acids. A small quantity of the clear liquid after use should be evaporated to test its solvent action. The reaction of the water solution on test papers should be tried. Also the gases (if any) should be observed, and any other change noted down.

Expt. 44.—Try the effect of water and dilute acids on *separate small* portions of the following substances—note down the results obtained: calcium oxide, copper carbonate, lead oxide and metallic zinc.

[The illustrations in this article are from the following text-books:—"Practical Inorganic Chemistry," by Dr. G. S. Turpin; "Introduction to the Study of Chemistry," by Prof. W. H. Perkin and Dr. Bevan Lean; "Chemistry for Schools of Science," by Mr. W. S. Parrish; and "Primer of Chemistry," by Sir H. E. Roscoe.]

PIONEERS IN EDUCATION.

By Foster Watson, M.A.

Professor of the Theory and Practice of Education in the University College of Wales, Aberystwyth.

IV.—Rousseau, as an Unpractical and as a Practical Educationist.

It is often urged as a trenchant objection to educational theory that the theorists have been men of experience in teaching in only a very narrow groove and under exceptionally favourable circumstances. Erasmus, Vivès, Ascham, Rabelais, Montaigne, Locke, Rousseau, were not class-masters in a school at any period of their lives. Milton's school was an exceptional one in its smallness, and probably in its individual pupils. Vittorino's was a specially chosen set of pupils. Hence adversely disposed critics of theory point out the ease and plausibility with which these educationists have proposed schemes. They are a race of men living in an air serene, as far removed from the realities of the schoolroom as, say, Vivès' and Milton's proposed school-buildings are to be removed from the noise of cities and the concourse of men. No example can better be offered as a sacrifice to these critics than that of Rousseau. It is true he had been a private tutor. But, as he says of himself: "If my pupils did not understand me, I grew excited; if they were unruly, I felt like killing them then and there." And this is the man whose writings we are invited to consider! He was the father of five children, but this fact gives him but little authority for speaking on education. For Rousseau handed them all over to a Foundlings' Asylum. It is idle to pause here to attempt to explain this brutal act. It is simply detestable, and causes many teachers to grudge a moment's attention to such a writer. Yet no less acute a critic than Mr. John Morley says of the "Emile" (Rousseau's educational treatise):—"It is one of the seminal books in the history of literature . . . It cleared away the accumulation of clogging prejudices and obscure inveterate usage which made education one of the dark formalistic arts. It admitted floods of light and air into the tightly-closed nurseries and schoolrooms. It effected the substitution of growth for mechanism."

Inconsistent as Rousseau is in his advocacy of parental morality and his practice of it, contradictory as often is one part of his theory with another, slight as was his educational experience, his book was epoch-making. It is all a psychological puzzle in any way to attempt to understand the man and the writer. But all who have read him seem to think he has to be reckoned with as an educational writer. When the philosopher-princes come to their rule over educational Utopia, they will clearly have no desire to co-opt Rousseau. Still, even they will probably read the "Emile."

Rousseau, in a word, illustrates vividly that intellectual activity violently urged in one direction will likely enough in due time meet with a reaction equal in force and opposite in direction almost as if we were in the physical world of matter. Milton had held that "the end of learning is to repair the ruins of our first parents by regaining to know God aright." The centuries before Rousseau had held the dogma of the fall and depravity of man until it became ingrained in the consciousness of the age and coloured life with the darkest hues, and in some forms, *e.g.*, in the stricter Calvinists, led to black despair for the mass of mankind and to hopefulness for only a "few elect." Now Rousseau and his bold friends believed that things were bad indeed, but that they could, and ought, to be made better. As Mr. Morley eloquently says: "They at length ventured once more to look at one another with free and generous gaze . . . They stood erect in consciousness of manhood." The theological dogma said: "Man by nature is hopelessly corrupt." Rousseau, in his reaction against this black outlook, said: "Everything is good as it comes from the hands of the Author of Nature." It is only through man's agency that corruption begins. The child's soul is pure and good. It is the teacher's task and privilege to keep it so. With the Port-Royalists, enlightened as their school text-books are, yet holding firmly by the Fall of Man, they required a constant thought and attention to be given to every child. The Jesuits, too, wished to guard scrupulously, for the future purposes proposed by the Order for each child, the details of his up bringing. On all sides, therefore, there was the idea of ceaseless watchfulness over the child's actions to bring him to the desired haven. Given that the child is corrupt, eradicate every evil tendency you can. But suppose the child is by nature good, then, urges Rousseau, leave him to his nature. Only keep from him evil, corrupting influences, and of his own motion he will, with proper surroundings, develop healthily and humanly. Do the direct contrary to what has hitherto been done. If you believe the child is by nature good, do not try to influence him, particularly to eradicate anything. Give him the opportunity and provide the materials for his development according to his nature. Give him play, full play, for his self-activity. Otherwise, leave him alone.

In giving him free play for his self-activity, Rousseau begins at the beginning. Mothers should perform their natural duties, and children must "not be restrained by caps, bands and swaddling clothes. Let him have gowns flowing and loose, which leave all his limbs at liberty, not so heavy as to hinder his movements, nor so warm as to prevent him from feeling the impression of the air." Here is the first article of the new children's charter, as drawn up by Rousseau. Its essence lies in its reverence for, and utter confidence in, the spontaneity of childhood, if the surroundings are neither oppressive nor corrupting. The aim of the education is to be the foundation of a "natural" man. Nature, he thinks, or at least he advocates, will point out the aims of education, and it will suggest the order. On these points Rousseau is assertive, and does not condescend to discuss or explain, except that, in disgust and contempt with the corruptions and degeneration of his age, and in accordance with his maxim of "Do the opposite of what is usual," he suggests the direct opposite of a civilised man as the ideal of education, and leaves us with the "noble savage" theory, and the suggestion that a Robinson Crusoe existence on an island would be the healthiest and soundest of surroundings for a child's rearing. With such surroundings the evils of civilisation would be avoided in education. As to the *good* of civilisation? Well, briefly, that is *une quantité négligeable*.

Emile, his typical child, is to be brought up in the seclusion of the country, since islands are not available, under a tutor who is to devote the whole of his time to the well-being of the child from infancy to marriage. As Herbart incisively remarks: "This education costs too dear. The companion's life, in any case, is worth more than the boy's, even if we go no farther than mortality tables; for the probability of being able to live is greater for the man than the boy." Moreover, the idea of a tutor as the solution of the problem of the teacher is a limitation of satisfactory training to the rich alone, and riches, surely, are a product of civilisation. But it is useless here to open up the endless question of the contradictions of Rousseau. We admit, once for all, he is often impossible.

How is it, then, that he has established a claim to consideration? Probably, because amidst all his contradictions and paradoxes, he preserves a keen sense of the magnitude of the issues involved in making the most of the opportunities which the teacher has before him of moulding a fellow creature, or rather, let us say, of neither himself thwarting, nor allowing any other to thwart, the self-development which is possible to the active, spontaneous mind of childhood, when it is free to develop. He glories in removing the heavy hand and clumsy fingers of the ordinary teacher—with his apparatus of text-books, and his mechanism of objects and methods, his knowledge-doses, and cart-loads of materials, with corresponding volubility of exposition, and forceful training. He would go away—as far as Robinson Crusoe's island—to escape the dead hand of the crammer and the dark days of examinational fetishes, and take the children with him. Rather, he would say, "let childhood ripen in children." Instead of over-teaching, prefer to think that it is better not to give a lesson to-day if you can possibly put it off till to-morrow. But again, we are involved in Rousseau's paradoxical language.

It is not, however, with him the advocacy of pure *laissez-faire*, though, up to twelve years of age, Rousseau regards the child as best left alone—in respect of formal tutorial and literary instruction Exercise, he says, the child's body, his organs, his senses, his powers. The first teachers of philosophy are our feet, our hands, and our eyes, and to substitute books for these is not to teach us reason, but to use the reason of others. The use of the senses, too, must not be confined to what is ordinarily included in the observation of individual things. He wants this much more: Get all you can out of each of the senses and then check the impressions of the one by the impressions of another. Measure, reason, weigh, compare."

Rousseau advocates the "heuristic" method long before it received its name. Throughout the teacher is advised to even withhold information from the child rather than check the possibility of the impulse to self-activity to work out and discover things for himself. It is not proposed to teach the pupil the sciences, but "to give him a taste for them, and methods for learning them." Here Rousseau forecasts the positions of Herbart, that knowledge is not to present itself as the end to the mind of the teacher and to be imparted by making lessons interesting, but that the real end of teaching is to arouse intellectual interests, and that this is to be accomplished by means of the presentation of suitable knowledge.

That Rousseau unites the practical along with the unpractical I will merely instance such far-reaching ideas as the following;—

"Various methods of teaching reading are in vogue. But there is one better than all. Give the child a *desire* to read; practical methods become secondary."

"The fear of darkness is often induced in children. Never shut up your child in a black-hole. Let him have sport by night. Let him laugh as he goes into the darkness, and let him laugh as he comes out of it."

"In drawing, I would have my pupil cultivate this art, not exactly for the art itself, but *for rendering the eye accurate and the hand flexible*. . . . . He must not draw from models and copies, but from objects. He shall have no master but Nature."

With lavish brilliancy, Rousseau's educational diamonds sparkle through his pages. The teachers of "inventional geometry" will find that Rousseau avers: "I do not profess to teach geometry to Emile, but it is he who will teach it me. I will look for relations in a way to make him find them." So, too, Mr. Herbert Spencer's well-known statement of the "doctrine of natural consequences" as a mode of punishment is clearly stated, and advisedly allows for the interference of the teacher's affection and thought. Innumerable are the hints which the practical teacher picks up, as he goes along with the account of Emile. So that even the reader, who may be impatient with the impracticable side of Rousseau, may be the one who, after all, will lose most by neglecting to read the "Emile."

A few words must be added to show Rousseau's continuity to Locke. Locke, we saw, recognised that there were different tempers, inclinations, and defects in children which required their "proper" educational remedies. Rousseau carries this sympathy further. Teachers, he finds, "always expect to find the man in the child, without thinking of what the child is before it is a man. And this is the study to which I have especially devoted myself, in order that should my entire method be false and visionary, my observations might always be turned to account. I may not have seen aright what ought to be done, but I believe I have seen aright the subject on which we have to act . . . Childhood has ways of seeing, thinking, feeling, peculiar to itself; nothing is more absurd than to wish to substitute ours in their place."

Such a pronouncement amounts to what is called, in scientific subjects, a "discovery," and I venture to think that the sympathy with childhood which it reveals, constitutes a new start for educational thought, and is more than a makeweight to the latter-day reader, for all the perplexity and unsatisfying nature of Rousseau's educational paradoxes.

TEACHERS' NOTES ON ENGLISH HISTORY, 1603-1715.

By C. S. Fearenside, M.A.(Oxon), and L. J. McNair, B.A.(Cantab.)

V.—The Sons of Charles I., 1660-1688.

How was it that the House of Stuart, restored with such enthusiasm in 1660, was expelled less than thirty years later with almost equal enthusiasm? That is the main problem of this period. The explanation is that Charles II. and James II. were the sons not only of Charles I., but also of Henrietta Maria—*i.e.*, they were not only autocrats but Roman Catholics.

I. Distinctive Features of the Period.

(i.) PRACTICAL WEAKENING OF THE PREROGATIVE, despite the formal "restoration." Instances:—

(1) King cannot do without Parliament.

(2) King cannot keep the Ministers of his choice.

(3) King cannot raise money, nor always spend money, as he pleases.

(4) King's powers of arbitrary imprisonment and detention are still further limited by the *HABEAS CORPUS ACT*, **1679.**

(5) King's attempts to maintain a large standing army, to set aside laws wholly or partly, and to impose his religious creed on his subjects, are successfully resisted by Parliament.

(ii.) WAVERING FOREIGN POLICY: alliance with **France** (agreeable to the Stuarts on ecclesiastico-dynastic grounds) is gradually replaced by an alliance with the **United Provinces** against France.

(iii.) DEFINITE FORMATION OF PARLIAMENTARY PARTIES under the enduring names of **Whig** and **Tory.** N.B. These names are respectively of Scottish and Irish origin.

(iv.) DEFINITE RISE OF PROTESTANT NONCONFORMITY in England: the result of the **Caroline** *Act of Uniformity*, **1662,** just as the rise of Catholic Nonconformity was the result of the **Elizabethan** *Act of Uniformity*, **1559.**

II. Divisions of the Period.

(i.) ANTI-PURITAN PERIOD, **1660-1670:** the **Clarendon Code** is meant to protect the Restoration settlement against the classes who had been the strength of the New Model Army. Contrast the "**Cabal**" with the modern "Cabinet."]

(ii.) ANTI-ROMANIST PERIOD, **1670-1681.** The *Treaties of Dover*, **1670,** substitute for the fear of Puritan intrigues at home the fear of Roman Catholic intrigues, foreign and domestic. Hence the *Test Acts* of 1673, 1678, the "*Popish Plot*" scare and the *Exclusion Bill*, 1679-1681 (a crisis demanding close attention).

(iii.) ROYALIST REACTION, **1681-1688** (June). The successive failures of the *Exclusion Bill*, the Rye House Plot, and the Argyll-Monmouth insurrections, 1685, encourage James II. to take up the propagandist policy expressed in his use of the **Dispensing Power** and the **Suspending Power**, and in his Irish administration.

(iv.) THE PROTESTANT REVOLUTION, **1688** (June)—**1689** (February). The birth of a son to James renders desirable, and the acquittal of the Seven Bishops seems to render feasible, an appeal from all kinds of **Protestants** to William of Orange to champion the "Protestant Liberties" of England. The **Protestant Armada** of **1688** is successful, and the invader is rewarded (though by no means unanimously) with the **English** kingship on the terms laid down in the *DECLARATION OF RIGHT*, February, **1689**.

III. Miscellaneous Points.

(i.) BIOGRAPHIES: **Clarendon**, Danby, Halifax, Monmouth, **Shaftesbury**, Sidney, Sunderland, Tyrconnel, **William of Orange**.

(ii.) MAP WORK: American colonies (including Carolina, New York and Pennsylvania), Invasions of Monmouth and William of Orange.

(iii.) TEXTS (for Talks, or for problem work).

(1) "Brother, I have no wish to go on my travels again." [Charles II. to James.]

(2) "Three sights to be seen—
Dunkirk, Tangier, and a
barren queen."
Doggerel attack on Clarendon, 1667.

(3) "The power of Parliament is more or less or nothing, as the King pleases to make it." [Clarendon to Charles II., 1667.]

(4) "It is strange how everybody do now reflect upon Oliver and commend him." [Pepys, in 1667.]

(5) "The only good public thing that hath been done since the king came to England." [Pepys, of the Triple Alliance.]

(6) "We do all naturally love the Spanish and hate the French." [Pepys.]

(7) Two Sayings about the United Provinces:—
- (*a*) "Delenda est Karthago." [Shaftesbury.]
- (*b*) "A nation of Shopkeepers." [Louis XIV.]

(8) "It is only laying down my gown and putting on my sword." [Shaftesbury, in 1673.]

(9) "It is not right that subjects capable of serving well should be prevented from doing so by reason of their creed." [James II., in 1685.]

(10) "I did not expect this from your church." [James II. to the Seven Bishops.]

(iv.) BOOKS. Evelyn's "Diary"; Pepys' "Diary"; Dryden's political poems; Macaulay's "History" (ch. ii. and iii.) and various "Essays"; H. D. Traill's biographical stories of "Shaftesbury" and "William III." W. F. Taylor's "England under Charles II." ("English History from Contemporaneous Writers" Series) is an excellent shilling's worth. The Source-books of Professors Colby and Hart continue valuable. For international relations, Seeley's "Growth of British Policy" is indispensable.

THE compilers of these Notes return thanks for suggestions received: they would be glad to receive from teachers information as to topics in which they feel the need of help, suggestions and criticisms. Letters should be marked outside "Oxford History," and addressed to the Editors of THE SCHOOL WORLD.

MANUAL INSTRUCTION IN SECONDARY SCHOOLS.[1]

By W. A. KNIGHT.

Headmaster of Sexey's Trade School, Bruton.

Present Position of Manual Instruction.

I THINK we are justified in assuming, as far as imperfect sources of information will allow, that there is a strong and distinct tendency on the part of secondary schools to take up the subject as an integral part of their curriculum; that a large number of schools have recently introduced and are developing some form of it; that a small number, certainly a minority, have well-organised and well-planned courses, with good teachers and properly-fitted workshops; but that still a very large number (probably, or perhaps I had better say possibly, a majority of the Headmasters' Association list) have not yet attempted it seriously.

With regard to the advisability, I would almost say the necessity, of making manual instruction a part of the education of every boy in our secondary schools, there can be, I venture to say, but one opinion (if only the examination difficulty could be eliminated). The case for its inclusion has been stated many times, so that I need only trouble you with a few reasons, by no means exhaustive, which will occur to any one who considers the subject.

Reasons for Introducing Manual Instruction.

The experience of primary and higher primary schools where it has been introduced conclusively proves its value. The evidence is unanimous and convincing.

In a rational system of education, the aim should be, I take it, to harmoniously develop not a few, but all, of the faculties with which Nature has endowed us. It has been claimed by a distinguished authority,[2] for physical science, when properly taught, that it is "capable of developing mental qualities that are not aroused, and indeed are frequently deadened, by the exclusive study of languages, history and mathematics." The same claim may be put forward for manual instruction. Do not the senses of sight and touch, through which we receive most of our knowledge of the outside world, require developing, as well as the memory and reason? Further, the majority of educational experts agree that the cultivation of the eye and the hand actually helps forward the education of the purely mental faculties.

Another advantage is its beneficial effect upon the other subjects of the curriculum. There is no worse enemy against which the teacher has to fight than inaccuracy. The boy who is inaccurate in his arithmetic, for example, makes the same blunders over and over again, because he sees no practical advantage in, or pressing need for, doing otherwise, beyond the entreaties of the teacher, to which he has probably grown accustomed. But directly the boy gets into the workshop, the question of "fit" crops up in such a decidedly forcible manner that the need for accuracy is at once apparent.

The deftness of fingers gained in the workshop is of immense influence on the manipulative work of practical science.

The training of the eye to observe and to judge is helpful in science and also in the art instruction.

The combined training of the hand and eye is of incalculable benefit to the individual in after-life.

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[1] Abstracted from a paper read at a conference held at the English Education Exhibition under the auspices of the Incorporated Association of Headmasters.

[2] British Association Committee on Science Teaching.

Perhaps the greatest influence of the subject is that which it has on geometry. The boy sees the reason for making a right angle or a geometrical figure accurately, and remembers his methods with a view to using them.

If manual instruction does nothing more than raise the standard of attainment in mechanical occupations (and this is claimed for it), it deserves consideration from our secondary teachers. Even in those who are destined, not to *make*, but only to *use*, the development of a power of judging bad or inferior workmanship will re-act on the source of supply, and thus tend indirectly to improvement.

Again, it cannot be denied that even now there exists among us, in certain classes of society, a sort of genteel feeling that some indefinable disgrace attaches to manual labour, *except when performed by other people.* Manual instruction tends to eradicate this false sentiment, while at the same time, fortunately, it does not unfit the learner for afterwards following an occupation which may involve only mental labour.

I cannot forbear calling attention to a certain *moral* effect. It stimulates a "love for truth, simplicity and intellectual honesty." It has been said, with much force, that the boy who learns to despise "work out of truth," who will not "tell a lie in wood," will by a necessary process of reasoning despise a lie in words.

It also gives boys who are slow of speech and thought, who might be set down in literary work as dullards, a chance of shining, and I am convinced that many boys are thereby lifted out of that deadening feeling of despair which comes from being continually at or near the bottom of the form. To all boys, clever and dull, it renders school-life more interesting, and surely any legitimate device for doing this deserves our earnest consideration.

Difficulties.

I am well aware that many difficulties stand in the way of introducing it into all our schools. There are the examinations to be considered. It is not in the Syllabus. Neither was practical science a few years ago. Examiners and examining authorities will be slow to advocate the change, because of the practical difficulties involved in arranging for the examination. The presence of the examiner is indispensable. One way out of the difficulty is to diminish the number of examinations, and it is to be hoped that we are not far off this very desirable event. The time at the disposal of the teacher is, at present, all too short for the number of subjects to be taught. Part of this difficulty is obviated by the fact that manual instruction is of such a nature as to relieve the strain caused by continuous literary or mathematical work, and forms a pleasant break for the learner.

Suggested Course.

I trust I shall not be thought presumptuous if I close my paper with a short sketch of a manual instruction course, which is doubtless very imperfect, but which has been slowly built up, step by step, as suggested by experience and the advice of experts, and which has been in operation, in part, for eight or nine years, and in its entirety for five years. It is not given with any suggestion of finality, and criticism will be warmly welcomed. The school consists of 100 boys, ranging in age from 10 to 17, and largely drawn from a rural population. The majority remain at school for three years or more, some for four or five years. The time available for manual instruction is rather greater than in most schools, and is, roughly, three hours a week. The curriculum of the upper part of the school includes practical science. There are no optional and no extra subjects in the prospectus, so that every boy takes manual instruction as he takes arithmetic or history, as a matter of course. The examinations are not unduly pressing, although every boy in the school is examined annually and is liable to inspection at any time by outside authorities.

Work in Cardboard (Age 10-13).

The first two forms are taught manual instruction in cardboard. The work is done in the ordinary school desks, which are single, and are protected by thick pads of strawboard. The course followed is that laid down in Mr. Heaton's admirable book on Cardboard Modelling. It has been found necessary to re-arrange the order of the various exercises and to supplement it with additional exercises in making models of geometrical solids. The full course occupies two years.

Work in Wood (Age 12-15).

When a boy reaches the age of 12 or 13 he is then strong enough to handle a plane and saw and passes into the woodwork shop, which provides accommodation for about 16 pupils, with a set of tools for each. This course is also planned for two years, although a small number of boys who do not gain promotion may have to spend three years over it. The course followed is mainly the English system of joints, with a few models of useful articles added. An attempt has been made to carefully grade the exercises involved in the construction of joints or models in order of difficulty. Before a joint or model is attacked the boys practise any new exercise involved and thus gain confidence. There is here a fundamental departure from the principles of the Swedish Sloyd, where a slight mistake often involves the rejection of a model and the (apparent) loss of several valuable hours of labour. Sand-paper is sparingly used and putty never.

Work in Metal (Age 15-17).

The boys who reach the two upper forms enter the metal workshop, which is fitted up nominally for eight students, but as the course is worked in two sections, nearly double that number can be taught. There are two instructors, and while one section is working at the forge or watching the teacher while he performs some manipulation, the other section is working at the benches. Iron, steel, zinc, copper and brass are used at various times and in the various forms of wire, rod and sheet. The earlier models are extremely simple, the first being a crucible triangle, which involves simply the neat twisting of brass-wire. An ordinary staple comes 4th. An ornamental iron door-handle, which I was shown a few years ago in a higher primary school in Paris as the first model of the course, takes about the 20th place. Other exercises are callipers, chisels, a bucket, a garden trowel, a bolt and nut, and a steel square.

In each division of the course the teaching is collective, *i.e.*, every boy is doing practically the same exercise at the same time. This greatly economises the teacher's time and labour. The metre and its sub-divisions are used throughout alternately with the English measures. Lessons are given on tools and materials, and great importance is attached to posture and the methods of holding and using tools. In planning the course, the following considerations have been kept in view, and should, I venture to think, underlie any thoroughly efficient course of manual instruction :—

Characteristics of a Good Course.

The materials used, cardboard, wood or metal, must be *adapted to the strength of boys at different ages.* It might be thought that metal-work would make too great a demand on the physical energies of boys of 16 or 17 years of age, but I am not aware that the wielding of a hammer is more exhausting than that of a cricket bat or that the use of the file involves more physical strain than an ordinary football match. It is hardly necessary to point out that such articles as a shaft of a screw steamship or a fly-wheel of a steam engine are not attempted, or that a heavy sledge-hammer is nothing more than ornamental in a school workshop. Manual instruction does not mean engineering or a trade in any sense of the word.

The various manipulations must be *graded in order of difficulty.* Too much importance cannot be attached to this point. It is, of course, an educational truism, for *all* subjects, but is too often forgotten or neglected in the teaching of manual instruction.

The course *must be interesting*, and should afford sufficient variety. While the object should not be to provide a good show for the annual prize distribution, or even for such an exhibition as the present one, yet it is found useful to introduce into the course, at various places, finished models involving previous exercises. An added interest is given if the finished work becomes the property of the maker, whenever a certain standard of perfection is reached. In all cases, the work must be the sole production of the boy himself. Any demonstration by the teacher may be done on separate material.

A very important matter is the provision of good teachers. There has been a long controversy as to whether the ordinary teacher or the skilled artisan is the better instructor. I do not intend to enter on this dangerous ground, but merely point out that in the controversy it has been often overlooked that a teacher can generally, if he likes, attain sufficient practical skill, and that the intelligent artisan can in many cases secure sufficient instruction in the principles of teaching. But I must emphatically protest against the introduction into any part of the school of the untrained artisan, unaided and without guidance from a teacher. In the majority of cases, much positive harm must result.

Drawing should be Taught Concurrently.

A good course of manual instruction must be based upon drawing, and here, I think, occurs one of the most frequent errors in the present teaching. In many cases which have come under my notice, the boys work from a printed book of drawings, in others they merely copy drawings from the blackboard into their own drawing-books, while in some cases there is no attempt to draw at all. The best method seems to be that the work should be done in the following steps :—

(1) A lesson is given by the instructor upon the particular joint or model, which should often be made wholly, or in part, before the class.

(2) The boys make rough sketches, properly dimensioned.

(3) A finished drawing is made from the sketch, showing plan, elevation, section and isometric sketch.

(4) The drawing is translated into a material form.

Work for the I.A.H.M.

Before closing, I wish to make the suggestion that in view of the growing interest in the subject, in order to avoid waste of effort and the mistakes which always inevitably attend educational experiment, the subject should be entrusted to some central body, say a committee of the Headmasters' Association, similar to the Committee on Science Teaching, who could collect information from various sources and suggest the best course and the best methods, without hampering individual efforts, or destroying that delightful variety in secondary education which we so frequently hear praised. The work of such a committee would, I feel sure, be a source of guidance, at least to many of us, and would prevent much waste of money, time and effort.

THE BOARD OF EDUCATION ACT, 1899.

THE Act to provide for the establishment of a Board of Education for England and Wales and for matters connected therewith, which was passed on August 9th, 1899, comes into operation on the 1st of April of this year. The sections of the Act more directly concerned with questions of education are here reprinted for convenience of reference in connection with the opinions in another part of this number (pp. 121-6). Section 1 of the Act deals with the formation and constitution of the Board. Sections 2-5 are as follows :—

Duties and Powers of the Board of Education.

2.—(1) The Board of Education shall take the place of the Education Department (including the Department of Science and Art), and all enactments and documents shall be construed accordingly.

(2) It shall be lawful for Her Majesty in Council, from time to time, by Order, to transfer to, or make exerciseable by, the Board of Education any of the powers of the Charity Commissioners or of the Board of Agriculture in matters appearing to Her Majesty to relate to education, and the Order may make such provision as appears necessary for applying to the exercise of those powers by the Board of Education the enactments relating to the Charity Commissioners or to the Board of Agriculture.

Provided that any question as to whether an endowment or any part of an endowment is held for or ought to be applied to educational purposes shall be determined by the Charity Commissioners.

Inspection of Secondary Schools.

3.—(1) The Board of Education may by their officers, or, after taking the advice of the Consultative Committee hereinafter mentioned, by any University or other organisation, inspect any school supplying secondary education and desiring to be so inspected, for the purpose of ascertaining the character of the teaching in the school and the nature of the provisions made for the teaching and health of the scholars, and may so inspect the school on such terms as may be fixed by the Board of Education with the consent of the Treasury: Provided that the inspection of schools established by scheme under the Welsh Intermediate Education Act, 1889, shall, subject to regulations made by the Treasury under section nine of that Act, be conducted as heretofore by the Central Welsh Board for Intermediate Education, and that the said Board shall be recognised as the proper organisation for the inspection of any such schools as may be desirous of inspection under this section.

(2) The council of any county or county borough may out of any money applicable for the purposes of technical education pay or contribute to the expenses of inspecting under this section any school within their county or borough.

Consultative Committee.

4.—It shall be lawful for Her Majesty in Council, by Order, to establish a Consultative Committee consisting, as to not less than two-thirds, of persons qualified to represent the views of Universities and other bodies interested in education, for the purpose of—

(*a*) framing, with the approval of the Board of Education, regulations for a register of teachers, which shall be formed and kept in manner to be provided by Order in Council: Provided that the register so formed shall contain the names of the registered teachers arranged in alphabetical order, with an entry in respect to each teacher showing the date of his registration, and giving a brief record of his qualifications and experience; and

(*b*) advising the Board of Education on any matter referred to the committee by the Board.

Orders to be laid before Parliament.

5.—The draft of any Order proposed to be made under this Act shall be laid before each House of Parliament for not less than four weeks during which that House is sitting, before it is submitted to Her Majesty in Council.

Sections 6, 7, 8, and 9 respectively, treat of the staff, remuneration, and expenses of the Board; the style, seal, and proceedings of the Board; and the power for the President or secretary to sit in Parliament.

COMMERCIAL EDUCATION IN FRANCE.

THE Report on commercial education in France, made by Mr. H. Austin Lee, Commercial Attaché to H.M.'s Embassy at Paris, and recently published by the Foreign Office,[1] contains an abundance of information which will prove of great assistance to committees and headmasters responsible for the organisation of courses of instruction in commercial subjects in the different industrial centres throughout this country.

Elementary Schools under Official Supervision.

There is a certain number of boys' and girls' primary industrial and commercial schools in France under departmental or communal control and State supervision.

The programme of tuition for each school is arranged by the local Council of Improvement, a general schedule issued by the Ministry being taken as the basis. A table of directions is issued to the teachers respecting methods of teaching and points upon which special stress is to be laid, a fairly uniform type of instruction being thus attained. The course of study occupies three years, at the end of which period a certificate is granted to pupils passing the final oral and written examinations.

The following subjects form the official curriculum above referred to:—Commerce and book-keeping, one foreign language, arithmetic and algebra, geography, handwriting, chemistry and commodities, common and commercial law, commercial economy, French language, drawing, history, natural history and hygiene, geometry, and elementary physics.

The curriculum for girls is the same, with the addition of "morale," domestic economy, and sewing and cutting out.

The final examination comprises:—

(1) Written tests: consisting of a French essay; questions upon theoretical book-keeping and commercial legislation; questions in arithmetic; the writing of a letter in English and the translation of an English letter into French, both without the aid of a dictionary.

(2) A Practical test: consisting of entries relating to one or more commercial transactions with the documents bearing upon the same, and the making up of a current account by one of the usual methods.

(3) Oral tests: bearing on parts of the curriculum not included in the written examinations, with the exception of modern languages, for which a *viva voce* translation and a conversation have been found necessary.

Another class of schools under State supervision are the superior primary professional schools, which are still under the joint supervision of the Minister of Public Instruction and the Minister of Commerce and Industry. These are mostly industrial schools; some, however, possess distinct commercial sections, whilst all give commercial instruction of a rudimentary type. The most important of those furnished with commercial sections are the establishments at Angoulême, Clermont-Ferrand and Rouen, the instruction being, on the whole, similar to that of the practical commercial schools.

The subjects of instruction are: Book-keeping and commercial law, *morale*, French language and commercial style, economic and industrial geography, arithmetic, modern languages, handwriting, drawing, manual exercises (two hours per week), and domestic economy.

Elementary Schools not under Government Supervision.

The commercial school in the Avenue Trudaine, Paris, may be taken as a type of this class; its system has, indeed, been to a great extent copied in the organisation of the practical commercial schools.

This school was founded in 1863 by the Paris Chamber of Commerce, and has since been carried on under the management of a committee of six members of that body. Its object is the preparation of youths for commercial, banking, and administrative posts, and the Chamber undertakes the task of finding suitable employment for those pupils who bring their studies to a successful termination.

The fact that the diplomas and certificates are issued by so important a public body as the Chamber of Commerce has given them a special value, and the placing of pupils has hitherto presented no difficulty, the demand always largely exceeding the supply. Tuition is not entirely gratuitous; a small fee of 220 fr. per annum payable in 10 monthly instalments is required.

With regard to scholarships, which give free education, 20 have been founded by the State, and 20, divisible into half scholarships, by the Chamber of Commerce, whilst the number has been further increased by the liberality of most of the great Parisian financial establishments, of the railway companies, and of individual members of the Chamber. The scholarships are obtained by competitive examination. A few scholarships at the School of High Commercial Studies are also reserved for pupils of this school

The regular course of study is spread over four years. Pupils are admitted from the age of 12½, a preparatory course, however, existing which may be attended from the age of eight.

The curriculum is as follows:—French language and literature; the English, German, Italian, and Spanish languages; history and geography, in so far as they are directly connected with commerce: arithmetic, including elementary algebra (special attention being devoted to mental arithmetic and rapidity in calculation); book-keeping in all its branches; handwriting; general ideas upon practical geometry and drawing; shorthand and type-writing; lectures upon commercial law; political economy and the elements of physical science.

In the preparatory course English only is taught. In the ordinary course three modern languages are obligatory; English and German throughout the four years, with the addition of Spanish or Italian during the last two.

Whilst the object is of course purely commercial instruction, much trouble is taken to prevent the scholars becoming mere commercial machines, and their general education appears to occupy the minds of the director and his staff as much as is possible considering the actual object of the school.

Private Institutions in Paris.

Amongst the very numerous private institutions for commercial instruction which exist both in Paris and the Departments, the Pigier School in the Rue de Rivoli, perhaps, deserves a short special notice on account of the peculiar methods of procedure adopted.

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[1] Miscellaneous Series, No. 501.

This school is in many respects similar to the "business colleges" of the United States. It is carried on as a complete mercantile house with all its complementary branches. Actual goods are handled, and the pupils perform successively all the duties of the various clerks, cashiers, agents, &c., attached to the house. Everything proceeds on the most realistic principles, sales, purchases, banking, arrival and departure of goods. It is claimed that by this system pupils acquire not only theoretical knowledge, but practical everyday business habits with a minimum expenditure of time. Pupils can enter at any age, and the programme is so arranged that the course of study can be taken up at any time.

Travelling Exhibitions.

In 1886 two distinct classes of travelling exhibitions were founded by the State. The first class applies to primary professional and commercial education, and is limited to youths between 16 and 18 years of age intending to reside in countries out of Europe. They are freed from military service, if they reside abroad, until after they have attained the age of 30. The exhibitions can be held for two years, and the grants amount to £160 for the first year, and £120 for the second. When the holder shows exceptional capacity a further grant of £120 may be made for a third year.

Successful candidates are expected to leave France before the 20th of December of the same year, and to report themselves at the Consulate of the town or district where they intend to reside. They remain under the supervision of the Consul during their tenure of the exhibition. They are expected to forward a monthly report of their occupations and studies to the Minister of Commerce and Industry, and a quarterly report upon the industries peculiar to the locality, or upon the state of its general market, particular attention being paid to the openings available for French trade.

The question of elementary commercial training has, on the whole, received a large amount of attention in France during the last decade; nevertheless the actual amount given is small in proportion to the population of the country, and the movement may almost be said to be still in its infancy. This remark applies to schools and not to free classes for adults, which are very numerous and important. This latter branch of education has made great strides during the last few years. All the larger towns, many of the smaller, and a number of country districts now possess evening commercial classes for adults and young people of both sexes, which are said to give satisfactory results.

Higher Commercial Education.

The prime factor with regard to commercial education in France is the existence of a number of schools denominated "Superior Commercial Schools." Some of these establishments have been carried on for a very considerable time, one, indeed, having been founded as early as 1820. But it was not until 1889-90 that they became connected with the Government and obtained semi-official recognition.

This so-called "recognition by the State" involved a number of conditions materially altering the curricula, the mode of admission to, and the management of the schools as a whole, whilst as a set-off the following were the more important privileges granted to students obtaining the superior diploma:

(1) Exemption from two out of three years' compulsory military service (for the first four-fifths only). (2) Eligibility to compete for Consular clerkships, for junior clerkships in the Ministry of Commerce and Industry, for posts under the customs administration. (3) Eligibility to compete for admission to the commercial section of the colonial school. (4) Eligibility to compete for Consular and Diplomatic posts (for students possessing also a bachelor's degree).

The principal regulations for the schools contained in the 1890 and subsequent decrees are:—Students are admitted by competitive examination only. The annual number of vacancies at each school is fixed by the Minister of Commerce and Industry. Candidates must have reached the age of sixteen on the 1st of July preceding the examination.

The following are the subjects of the entrance examination:—

Written examination: Mathematics—Arithmetic, Geometry, Algebra; French—Composition, Orthography, Handwriting; Modern language (with the aid of a dictionary)—Exercise, Translation, Geography.

Oral examination—Arithmetic, Modern language (explanation of a given passage and conversation), Chemistry, Physics, History.

The candidates are allowed to select either English, German, or Spanish as modern language. At the Lyons school Italian may be chosen; at Marseilles, Italian or Modern Greek, and at Nancy, Russian. The final examinations are exclusively oral, except in the case of the silk industry section of the Lyons school. The staff of examiners is formed in the same way as for the entrance examinations. Each student draws by lottery the section of each subject upon which he is to be questioned.

Travelling Exhibitions of the Second Grade.

Travelling exhibitions of the second grade form an important factor in connection with this portion of commercial education. They are only allotted to successful students at one of the superior commercial schools. Candidates must not be more than twenty six years of age upon July 1 of the year in which the competition is held. The exhibitions are only intended to enable the holders to reside abroad for a limited period, and are usually granted for two and in some cases for three years. In European countries, Tunis and Algeria, their value is 100*l.* for the first year, and 80*l.* for the second and third, whilst in other countries they entitle the exhibitioner to an income of 160*l.* during the first, 120*l.* for the second, and, if the exhibition is prolonged, 80*l.* for the third year. Candidates can only compete on showing that they have performed military service.

It may be mentioned that, in addition to the scholarships given by the State, a large number have been founded at many of the schools by the public bodies under whose direct control they are, and also in many instances by private individuals. Nearly all the scholarships are allotted by competition, but a scholarship is occasionally awarded for special reasons without competition.

For the actual training in practical commercial matters, the "Commercial Bureau" system, adopted with success at some of the elementary schools, obtains at a number of these institutions. The students are divided into various home and foreign business houses, and carry out the usual trading transactions under the supervision of the professorial staff.

In the strict sense of the word, the "tertiary" grade of commercial education can scarcely be said to exist in France. The intention of the Paris Chamber of Commerce in founding the School of High Commercial Studies was to provide an establishment at which an even higher and more scientific type of commercial tuition would be given than by the Superior Schools.

The Paris School of High Commercial Studies is, perhaps, the most important and best-organised establishment of this class. It was founded in 1881 by the Chamber of Commerce, the Government sanctioning the raising of loans to the extent of 80,000*l.* for the purpose. During the first twelve years of its existence the receipts entirely failed to meet the expenditure, the deficits reaching the maximum of 6,200*l.* in 1885, and it was only in 1892 that there was a balance of about 400*l.* upon the credit side. In the matter of attendance, however, the success has been striking, the number of students rising steadily, almost without a break, from sixty-five in 1881 to two hundred and ninety-three, exclusive of the preparatory section, at the present day. The school comprises a preparatory and a regular section, the latter including a sub-section for students who are candidates for a commercial professor's certificate.

The studies in the preparatory section last one year. Students are admitted at the age of fifteen after an examination by the director, which may take place at any time of the year. The subjects of this examination are: French narrative, arithmetic, elementary algebra (optional), English or German exercise (with the aid of a dictionary), geography, and an essay on a point of French history between the earliest times and A.D. 1610.

THE SCHOOL PULPIT.

NOTABLE PASSAGES FROM SERMONS PREACHED IN PUBLIC SCHOOLS.

War and Righteousness.[1]

"To everything there is a season, and a time to every purpose under the heaven . . . a time of war and a time of peace."—ECCLES. iii. 1 & 8.

SUCH are the words of Ecclesiastes. But we have been so long accustomed to "a time of peace" that many of us had almost forgotten that there is also "a time of war." No doubt England has been engaged in a long succession of little wars, even during your lifetime. But they have been waged against barbarian or semi-barbarian antagonists; they have not seriously taxed the resources of the Empire; their course has been attended by success after success, if not by victory after victory. We had begun to think, or to act as though we thought, that the harder struggles and more serious sacrifices of war were for other nations, not for England. Secure behind the barrier of the sea, our communications ensured by the might of our overwhelming fleet, our vast possessions defended from danger by distance or inaccessibility or the proximity of none but friendly Powers, we had no idea, only a short time ago, that we should soon be compelled to engage in a war which would apply a crucial test to the organisation, the administration, the direction, even the vigour and material of our army. Least of all did most of us suppose that a formidable military power had been slowly shaping and strengthening itself within the borders of the British Empire—a power which would dare to enter the lists, with a confident hope of ultimate triumph, against the united forces of England and her loyal colonies. But the unexpected has happened. Determined to win absolute independence, interpreting past concessions as sure proofs of an ineradicable weakness of purpose, resenting external interference (for such they regarded it) with the inequalities and injustices of a corrupt system of government, the Boers, in the midst of amicable negotiations, entirely sincere on our part, suddenly threw off the mask, issued an ultimatum carefully framed in such terms that only one answer to it was possible, and, having quietly completed their preparations, flung vast bodies of men into British territory, thus securing, under modern conditions of warfare, a great initial advantage, which as yet all the efforts of our armies have not wrested from them.

To-day we are joining with multitudes of our fellow-countrymen in every part of England and Wales in "Intercession with Almighty God on behalf of Her Majesty's naval and military forces now in South Africa."

That our heartfelt sympathy is with our brave soldiers and sailors this morning, who can doubt? We should be false to the blood that flows in our veins, unworthy descendants of the Englishmen who in days gone by upheld the honour of England at Crecy and at Agincourt, or who in the days of Elizabeth beat back the Spaniard from the British coast, or who, undaunted by adversity, undazzled by a spurious *prestige*, steadfastly resisted through long and weary years, sometimes almost alone, the overweening ambition of Napoleon, until he was crushed at last on the field of Waterloo; we should be untrue, I say, to the race from which we spring and to which, by God's appointment, we belong, if our hearts were not to-day with those gallant men. And we cannot forget that among them are some to whom this chapel is almost as familiar as it is to you, or who in our old home have been as loyal to their school, and as proud of it, as you are now. Perhaps at this moment, on the banks of the Modder River, or under the shadow of Doorn Kloof, or where the heights of Stormberg bound the horizon, or in beleaguered Ladysmith, they are looking back wistfully upon the peaceful Sundays of their schoolboy life, so utterly unlike the claims and anxieties which press upon them to-day. How glad they would be to share, if only for a few hours, the privileges which you enjoy!

Yes, our sympathy with those who are fighting England's battles, and, not least, with our own old boys, is indubitable. We watch the progress of events with intense interest; we rejoice in the as yet too rare triumphs of our arms; we mourn over those who fall, as Lieutenant Lawley fell on Spion Kop the other day, although our sorrow is not unmixed with a just pride. And we are eager to give such help as we can supply. We should, for instance, deem it a scandal and a shame if ample funds were not forthcoming for the relief of the sick and wounded, of those who are dependent upon our soldiers, of the widows and orphans of the brave men who have sacrificed their lives in their country's cause. We are asked to-day to give what, if we had only faith to believe it, is more efficacious than admiration or sympathy or even money—our prayers.

After all, the issue of this war is in God's hands. He will decide its course and its conclusion according to the mysterious but unchanging principles of His rule. We discern those principles in part. We know that in the incidents of war, as in every other department of human life, He shows no mercy to improvidence or recklessness, or the lethargy of a blind self-confidence. If we have neglected preparation, if we have closed our eyes to glaring facts, if we have clung tenaciously to inferior weapons and obsolete methods of warfare, He is not likely to interpose in order to save us from the consequences of our own folly. At the present time we have good cause to be grateful to Him for so ordering the movement of circumstances that our negligences and errors are not irreparable. Sharp as is the test which the present war applies to our military system, the conditions of the test might have been incomparably worse. And the issues of life and death also are His. Whether any particular human being, in the tranquil avocations of peace or amidst a hailstorm of bullets on the battlefield, is to live or die, rests ultimately with Him. We can calculate chances and formulate tables of mortality, but in a region, to which no human mind can soar, the inscrutable Will of God still holds the scales of decision, swaying the hearts and purposes of mankind, wielding unseen forces, and ordering unlooked-for results. It would be presumptuous to forecast, as though they were assured, either the events of this war or the details of its final settlement. Yet more presumptuous would it be to reckon on the safety of anyone who is engaged in it. But we are bound, as believers in God, still more as believers in Christ and His promises, to lay before the eternal Throne our hopes and our fears, our aims and our desires. The mere presentation of them to Him, Who is Truth and Justice and Love, will illuminate their meaning and purge them of all that is sordid and base.

We pray that England may prevail and impose her will on her vanquished adversaries. Foreign critics see at the root of this prayer the meanest and most tawdry motives—the greedy thirst for gold, the insatiable lust for dominion. Let us come before God to-day and ask Him to enable us to see the truth. We believe that we are fighting in behalf of justice; that the Boers were withholding their rights from fellow-countrymen of ours, of whose claims we were the lawful champions; that they are oppressors of the native races; that, while we were seeking peace, they forced war upon us. We maintain that the triumph of our cause will be the triumph of righteousness, and that from that triumph will spring larger, wider benefits to the human race than anything in the Boer polity can bestow. Let us ask God to-day to throw His interpreting light upon the inner meaning of the desires which we cherish, and, while we pray for the success of our arms, let us pray with a yet greater earnestness for the prevalence of right.

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[1] Abridged from a sermon preached to the boys of Shrewsbury School by the Headmaster, Rev. H. W. Moss, M.A., on Sunday, February 11th, 1900.

ITEMS OF INTEREST.

GENERAL.

NOTWITHSTANDING the recommendation of the Select Committee of the House of Commons in 1890, and the fact that the Government Registration Bill of 1896 actually assigned the number of members who should represent different educational bodies, Sir John Gorst stated in the House of Commons recently that universities and other bodies concerned with teaching would not be invited to nominate persons for appointment on the Consultative Committee created by the Board of Education Act. The first members of the Consultative Committee will be appointed by the Order in Council, subsequent members in such manner as the Order in Council may direct.

REPLYING to a question of Lord Norton in the House of Lords towards the end of February, the Duke of Devonshire said he was not in a position to say when the Bill for constituting the local authorities to carry out the new system of education will be brought in. The Bill is, and has been for some time, under very careful consideration, and most probably it will not be introduced to Parliament until after the Board of Education Act has come into operation.

MR. T. H. ELLIOT, C.B., the Secretary of the Board of Agriculture, has been appointed an additional member of the Committee on Re-organisation of the Education Department and the Science and Art Department. The committee has been directed by the Lord President of the Council to consider the provisions of the Board of Education Act relating to the powers of the Board of Agriculture.

AMONG the Statutes made for the University of London by the Commissioners appointed under the University of London Act, 1898, those numbered 116-124 are concerned with examinations. The second of these states that "the examinations for matriculation shall be in such subjects as may be from time to time prescribed, and the Senate may make provision for holding separate matriculation examinations for different classes of students, having regard to the courses of study which the students propose to follow." There is doubtless much to be said in favour of having several types of matriculation courses, but there is great danger in beginning to specialise too early. We hope it will not lead to the creation of graduates in science who have no knowledge of literature, and of graduates in arts entirely ignorant of science.

THE Report to accompany the Statutes and Regulations of the University has now been published. From it we hear that, though a Faculty of Pedagogy has not been established, the Commissioners have not been unmindful of the claims of educational science. They have included some of the teachers in London training colleges amongst the recognised teachers of the University, and recommend the formation of a Board of Studies for the Theory, Practice, and History of Education, and they entertain the hope that the University will be enabled to establish adequate courses of lectures, and create a professorship in the subject.

THE Code of Regulations for Day Schools for 1900, which was recently published by the Education Department, differs in several important respects from its predecessors. Hitherto the subjects allowed in the course of instruction of older scholars have been either obligatory or optional, but these divisions have been abolished by the new Code. The obligatory subjects in previous Codes included reading, writing, and arithmetic, which were termed elementary, needlework for girls, drawing for boys, and one of the class subjects. In the place of these the new Code specifies the subjects "to be taken as a rule in all schools." They are:—(1) English, by which is to be understood reading, recitation, composition, and grammar in so far as it bears upon the correct use of language; (2) arithmetic; (3) drawing for boys, needlework for girls; (4) lessons (including object lessons) on geography, history, and common things; (5) singing, which is, as a rule, to be by note; and (6) physical exercises. The system of payment by results, which has undergone many modifications in recent years, now entirely disappears in favour of an all-round capitation grant.

THE London School Board at their weekly meeting on March 1st decided "that, in all schemes submitted by the Charity Commissioners for establishing or modifying endowed schools, the Board shall recommend the insertion of clauses which shall give assistant teachers the right of appeal to the governors of the schools in the matter of the scale of their salaries and proposed dismissal by the head teachers, and shall provide for an effective annual audit of all the school accounts; and that the Charity Commissioners be asked to receive a small deputation from the Board urging these proposals." A deputation was received by the Charity Commissioners on March 15th, but had to be content with the assurance that the Board of Education would, when it took over the powers of the Commissioners, give the question full consideration.

THE College authorities of Oxford and Cambridge Universities have agreed not to hold any examinations for scholarships before the first Monday in December beginning with the October term of the year 1900-1. This agreement applies to all open scholarships and to all close scholarships, except where the statutes of a college require an earlier date. The change will prove most acceptable to the headmasters of public schools, as they have for years objected to the scholarship examinations coming so early in the school year.

AT a recent conference, convened on the initiative of the West Riding Federation of School Boards to consider a proposal for the formation of an Examinations Board in modern languages and other commercial subjects, representatives were present from most of the large towns in the north of England. After considerable discussion it was resolved "that the executive of the Association of School Boards of England and Wales be requested to take up this subject and bring it to a successful issue as rapidly as they can."

THE "Calendar, History, and General Summary of Regulations of the Department of Science and Art" for 1900 shows that during the session 1897-8 there were in connection with the Department 2,025 institutions in which 11,723 science classes were held. From these classes 79,475 persons were examined in different subjects of science, working between them 150,401 papers, and earning in grants £169,604. These numbers do not include 281 classes held at 54 training colleges, from which 8,930 papers were examined, and to which £8,949 was paid in grants.

There were in 1897-8 in England, Wales and Ireland, 200 schools of art, and 1,284 art classes, in which together 120,771 persons received instruction in art subjects, for which £46,030 was paid in fees. The grant in aid of the classes received from the Department amounted to £67,704. These numbers do not include the 3,932 art students in training colleges, and 1,485,911 children being taught drawing in elementary schools.

There were last year, in the schools of the Girls' Public Day School Company, 7,045 pupils on the rolls, and the gross cost of their education was £92,960. The accounts showed a profit of £9,213, and the Council proposed to declare a dividend, free of income-tax, at the rate of 4 per cent. per annum.

The eighth annual report of the Cumberland Technical Education Committee for the session 1898-9 shows that three new secondary schools have been opened in the county during this time. These are the Keswick School, a dual school for boys and girls; the Nelson School, Wigton, and the Thomlinson Girls' Grammar School, Wigton. All are well-built and well-equipped schools, and likely to be of much service in their respective districts. The experiment of dual education at Keswick is particularly interesting, and so far seems to be an unqualified success.

The Lindsey (Lincolnshire) Technical Education Committee have during the past year been considering the provision of increased opportunities for the education of girls. It has been decided that the want can be met to some extent by inducing the governors of local grammar schools to constitute them mixed schools, educating girls and boys in the same building under the same staff. Alterations, with this object in view, are proceeding at Brigg Grammar School, and it is hoped that a girls' department will shortly be added to Louth Grammar School.

The Technical Instruction Committee of the City of Liverpool have decided to increase to £600 their annual grant to the local University College for the purpose of developing the instruction in the Science and Art of Teaching. In consequence of this increase a definite Chair of Education has been established, and a Mistress of Method and Tutor in Education appointed. The evening courses of lectures, specially intended for teachers, whether of secondary or primary schools, who are actively engaged during the day, seem likely to become increasingly useful.

From the report of the Cambridge Teachers' Training Syndicate just published, we find that two examinations were held by the Syndicate during the year 1899 in the Theory, History and Practice of Education. The June examination was held at seven centres, when 117 candidates presented themselves for examination, of whom six were placed in the first class, 81 in the second, 16 in the third, and 14 failed to satisfy the examiners. At the December examination 57 candidates presented themselves for examination, of whom four were placed in the first class, 32 in the second, 16 in the third, and five failed to satisfy the examiners. This makes a total of 174 candidates examined this year as against 145 examined in 1898, and 154 in 1897. It is the largest number the Syndicate has ever examined. For the certificate of practical efficiency 160 candidates presented themselves, of whom 67 were placed in the first class, 71 in the second class, 21 in the third class, and one failed to satisfy the examiners.

In the Department for the Training of Teachers in Secondary Schools added to the Cambridge University Day Training College in January, 1898, there were last year five students in the Michaelmas term, five in the Lent term, and six in the Easter term. The criticism lessons and the practising lessons were given for the most part in the Higher Grade School, Paradise Street. Mr. J. Wiles also kindly allowed his school to be used for the purpose of practice. Two of the students obtained the certificates of theoretical and practical efficiency given by the University, and three are now teaching in secondary schools.

The recently published return showing the extent to which and the manner in which local authorities in England, Wales and Ireland have applied, or are applying, funds to the purposes of technical education, summarises the main totals as follows:

	Total amount *expended* on Technical Education during the year 1897-8			*Estimated* total expenditure on Technical Education during the year 1898-9			Total amount raised by Loan on the Security of the local Rate under the Technical Instruction Acts (or otherwise) during the years 1897-8 and 1898-9 respectively					
							Year 1897-8.			Year 1898-9.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
England	826,450	5	1	834,908	11	2	69,333	17	3	132,583	9	10
Wales and Monmouth	28,005	14	0	35,179	8	6				1,000	0	0
Ireland	5,649	0	1	4,523	18	2						
	860,104	19	2	874,611	17	10	69,333	17	3	133,583	9	10

It should be noticed that the sums mentioned in the case of Wales and Monmouth are exclusive of the sum, estimated at £43,304, devoted annually to intermediate education under the Welsh Intermediate Education Act.

The total number of candidates entered for the Cambridge Local Examinations, which were held in December last, was 16,028. Of these, however, 1,260 were examined at centres in the colonies. It appears from the class-lists that in the Senior examination 37 boys are placed in the first class, 156 are placed in the other honour classes, 264 have satisfied the examiners, and 177 have failed; 22 girls are placed in the first class, 201 are placed in the other honour classes, 697 have satisfied the examiners, and 341 have failed. Sufficient merit has been shown by 226 boys and 105 girls to entitle them to exemption from one or both parts of the Previous examination. Of the Junior candidates, 395 boys are placed in the first class, 972 are placed in the other honour classes, 2,040 have satisfied the examiners, and 1,322 are rejected; 71 girls are placed in the first class, 485 are placed in the other honour classes, 1,411 have satisfied the examiners, and 628 are rejected. In the Preliminary examination, which is designed for candidates under 14 years of age, 225 boys and 118 girls are placed in the honour classes, 2,091 boys and 1,323 girls have satisfied the examiners, and 747 boys and 502 girls are rejected.

The Geographical Association is an organisation which deserves the support of all teachers interested in the improvement of geographical teaching. It was founded by some masters of public schools, and is now open to everyone interested in the teaching of geography. The Secretary is Dr. A. J. Herbertson, assistant to the Reader in Geography at Oxford, and the Treasurer is Mr. J. S. Masterman, to whom all applications for membership should be made at his address, St. Margaret's, Dorking. Recognising that the character of the instruction given in geography is controlled to a large extent by the questions set at public examination, the Association has presented a memorial to public examiners, and, in many cases, examiners have shown themselves in sympathy with the suggestions contained in it. The new syllabus of physical geography of the Cambridge Local Examinations affords further evidence of a desire to make geography a means of developing a pupil's intelligence and reasoning powers instead of a collection of names without significations, and of isolated facts. The Association possesses a large collection of lantern slides (maps, diagrams, and views of scenery), and members have advantages both in the hire and purchase of these slides, and of the excellent maps of the Diagram Company. The subscription is only five shillings per annum.

THE eleventh annual issue of "The Public Schools Year Book" (Swan Sonnenschein) includes, for the first time, the following public schools:- Boston, Derby, Hereford, Ipswich, Leicester (Wyggeston School), Portsmouth Grammar School and Stonyhurst College. The editors point out that the last-named is the first Roman Catholic public school to secure representation at the Headmasters' Conference. The following schools are also entitled to insertion next year: Coventry (King Henry VIII. School), Leatherhead (St. John's School), Leys School (Cambridge), Lincoln, Monmouth, Newport (Salop), St. Bees' Grammar School and Trent College.

THE appointments of University Lecturer in French and of University Lecturer in German at Cambridge have been cancelled. Dr. Breul has been appointed to be Reader in Germanic at a stipend of £300 a year.

IN the opinion of the School Board of the County Borough of Ipswich, it is desirable that, subject in all cases to the Central Board of Education, any new educational local authority—(1) Should take cognisance of all education, elementary, secondary and technical; (2) Should be elected and appointed for educational purposes only: (3) Should have effective control over the administration of all schools receiving aid from rates and taxes, provided that the entire control of religious instruction, and the appointment of teachers, in voluntary schools, remain in the hands of the managers of such schools; (4) Should receive and administer all imperial grants for education; (5) Should be empowered to take steps to secure due provision for education, where gaps are found to exist.

A PAMPHLET, giving detailed information of the Modern Languages Holiday Courses for 1900, arranged by the Teachers' Guild, can now be obtained from Mr. H. B. Garrod, the General Secretary. We have already called attention (p. 24) to the arrangements for this year, and are glad to be able to speak in high terms of praise of the excellent programmes of lectures which have been drawn up for the visitors to Elbeuf, Lisieux, and Tours.

A COMPETITIVE examination for admission to the Indian Police Service will be held in London on June 26th next. The number of candidates to be selected will be ten. They must be British subjects, not under 19 or over 21 years of age on June 1st, 1900. Intending candidates should apply to the Secretary, Judicial and Public Department, India Office, and return certain documentary evidence to him before May 1st, 1900. A strict medical examination precedes the literary examination. The latter, which is conducted by the Civil Service Commissioners, is in the following subjects:—(1) Mathematics I. (up to the solution of triangles in trigonometry); (2) French *or* German; (3) English Composition; (4) Geometrical Drawing; (5) Freehand Drawing; (6) Geography; (7) Mathematics II.; (8) German *or* French; (9) Latin; (10) Greek; (11) English History; (12) Chemistry and Heat; (13) Physics; (14) Physiography and Geology. All the subjects 1-6 may be taken, and any two of 7-14. Selected candidates have to pass an examination in riding, and are required to depart for India not later than October, 1900. The salary on arriving in India is Rs. 250 a month during probation, and on being appointed assistant-superintendents this is raised to Rs. 300 a month, with a prospect of promotion to posts with salaries varying to Rs. 2,500 a month.

SIMULTANEOUSLY with the above examination, there will be a competitive examination for nine appointments in the Indian Forest Service. Candidates must be between 17 and 20 years of age on June 1st next. Application for entrance to the examination should be made to the Secretary, Revenue Department, India Office, before May 1st. As in the case of the police appointments, there is a medical examination. The literary tests are the same in the two examinations, except that, in the examination for the Forest Service, German is an obligatory subject, and Botany is added to the subjects that may be taken. The Secretary of State for India nominates the successful competitors as probationers, who then enter the Royal Indian Engineering College, Cooper's Hill, to be trained for a period of about three years. The commencing salary of probationers is Rs. 350 a month.

THE Civil Service Commissioners announce that an open competitive examination will be held in London, Edinburgh and Dublin, commencing on April 24th, 1900, for junior clerkships in the Ecclesiastical Commission. The number of situations to be filled will be the number vacant at the time of the examination. It is probable that the number of situations to be filled by means of this competition will be three. The limits of age for these situations are 18 and 22, and candidates must be of the prescribed age on the first day of the examination. The examination will be in the following subjects:- Arithmetic; Algebra; *Précis*; English Composition, including handwriting and orthography; History of England; Geography (general); Latin (translation from and into), and French *or* German (translation from and into). A fee of £2 will be required from each candidate attending the examination. Applications on prescribed forms obtainable from the Secretary, Civil Service Commission, S.W., must be sent to him on or before April 6th, 1900. The scale of salary for these situations is, fourth section £70, rising annually by £7 10s. to £100; third section, £100, rising annually by £7 10s. to £190; second section, £190, rising annually by £7 10s. to £250; first section £250, rising annually by £10 to £350. On the ground of merit, junior clerks may be promoted to superintending clerkships (scale of salary £150, rising annually by £10 to £250), and on the same ground, subject to certain certificates, and after eight years' service, they may be promoted to the upper class of the establishment.

WELSH.

AT the annual meeting of the Association of Headmasters and Headmistresses of the County Schools, a long discussion took place as to the conditions under which the grants of the Science and Art Department should be awarded in the event of their being placed under the control of the Central Board. Resolutions were finally adopted urging that grants for work done in science and art classes should be awarded to county schools on the results of the inspection and examination of the

Central Welsh Board, due regard being given to the number of pupils, financial necessities, and the nature of the work done in the lower forms of each school; that it was not desirable to distinguish county schools into those which were schools of science and those which were not, but that all county schools should be recognised as schools of science by the Science and Art Department, provided they possessed satisfactory laboratory equipment, and that sufficient time were given to the teaching of science, mathematics and drawing.

THE question of the education at the county schools of pupil teachers from elementary schools was also discussed. The scheme submitted to the Association differed but slightly from the schemes already considered by various public bodies. It was, however, decided that every effort should be made to substitute the Junior and Senior Leaving Certificate Examinations for those of the Education Department, and to induce the Department to make the usual grants upon these Central Board Examinations as well as on their own.

THE Executive Committee of the Central Welsh Board have received a letter from the Charity Commission stating that, upon consideration of the reports of the Central Welsh Board on the inspection and examination of schools regulated by schemes under the Welsh Intermediate Education Act for the educational year ended June last, the Commissioners had been able to report to the Treasury that in the case of each of the schools, with the exception of the Cowbridge County School for Girls and the Haverfordwest Grammar School, the conditions required to be fulfilled in order to obtain an unreduced grant had been fulfilled. In the case of the Cowbridge County School the Commissioners remarked that they had ascertained that the school managers had in fact passed the resolution specified in the Board's report, and that they had recommended to the Treasury that a reduction of three-tenths should be made in the amount of the grant claimed in aid of the school. In the case of the Haverfordwest Grammar School the Commissioners stated that they had felt obliged to recommend that a reduction of five-tenths should be made in the amount of the grant claimed in aid of the school, the reason being that they could not regard the steps taken by the Grammar School governors to rectify the irregularities (on account of which a reduction was made in the grant last year) as sufficiently meeting the requirements of the case. The Commissioners also reported that they had recommended a reduction in the Treasury grant payable to the county of Anglesey in respect of the Holyhead School, on the ground that the delay in opening that school was inexcusable. With regard to the observations of the Central Welsh Board respecting the delay in providing permanent buildings for the Brecon Boys' School and the Brecon Girls' School, the Commissioners reported that they did not consider the circumstances such as to justify at present the reduction of the grant in the case of those schools.

SCOTTISH.

AT the last meeting of Aberdeen University Court a report was submitted regarding the provisions afforded students of the University to compete successfully in the Indian Civil Service Examinations. The report showed that the conditions of the examinations which came into force in 1892 still continued to act adversely against Aberdeen students. The main reasons for the non-success were stated to be:—(1) The raising of the age limit to 23. (2) The character of the examination, which demanded breadth rather than depth of knowledge, favoured the English universities, and notably Oxford. (3) The dearth of provision in Aberdeen University for teaching what were practically essential subjects at the examinations. The report concluded by urging upon the University Court the pressing necessity for instituting lectureships in such subjects as Roman Law and History, Economics, Political Economy and Political Science. An interesting discussion took place after the reading of the report. As the Court had no funds at their disposal for the appointment of additional lecturers, all that they could do was to forward the report to the Aberdeen Association for the Better Endowment of the University in the hope of money being received from the outside for so deserving a purpose.

PROFESSOR J. ARTHUR THOMSON, of Aberdeen University, delivered an address in Gordon's College on the 17th ult. on "Nature Study in Schools." Professor Thomson said that a long experience had led him to have a stronger faith than ever in the value of "Nature Study" as one of the great educational disciplines. At the same time he had a stronger sense than he had fifteen years ago of the grave dangers of teaching it badly, and of the difficulty of teaching it well. He was strongly of opinion that Nature Knowledge badly taught was worse than none at all. For while any other subject, say Grammar, badly taught was a mischievous thing in itself, it could hardly be said to have far-reaching effects, but bad teaching in Natural History meant spoiling the child's and therefore the man's whole outlook upon nature. The aim of teachers in this subject must not be to *inform* so much as to awaken: they must strive to give the children keys by which they might go on opening doors all their lives. Teachers would be greatly aided in their treatment of this subject by the natural healthy curiosity of their pupils. This they must foster even at the expense of their pride, but never satisfy at the expense of their honesty.

MR. A. P. FORRESTER-PATON, the generous donor of the Secondary Department and Model Workshops of Alloa Academy, has just intimated a further gift of £1,000 as an endowment for the Secondary Department, so that it may not become chargeable to the rates for some years to come.

IRISH.

THE Chief Secretary for Ireland, just before his illness, in reply to a question from Mr. W. Field, M.P., stated in the House of Commons that a Bill was in preparation to amend the Irish Intermediate Education Act of 1879, which would give the Intermediate Commissioners powers to carry out the recommendations of the recent Intermediate Education Commission. By the Act of 1879 money can only be expended in the form of prizes and results-fees. By the new scheme it is intended to devote some of the funds to inspection, grants for laboratories and other purposes, so that a new Act is required. It has since been stated in the House that the Bill will very shortly be introduced. If it passes, as it is sure to do, this session, there will then be nothing to prevent the Commissioners commencing to carry out their reforms.

A LARGE scheme of reform is also about to be introduced into primary education in Ireland in pursuance of the recommendations of the Manual Instructions Commission. The Commissioners of National Education have spent much time on their report, and have at last succeeded in getting the consent of the Treasury—an essential part, as the scheme involves an additional grant, as well as the changing of the methods in which some of the endowment for primary education is at present spent. The proposed reforms have not yet been made public, but from a very remarkable public speech made recently by the Resident Commissioner, Dr. Starkie, and confirmed by later utterances of the Catholic Archbishop of Dublin, they seem to be of a sweeping kind. There will be much less centralisation and more freedom and initiative given to individual schools and localities. The results system will be abolished, and much will be done to introduce training of the hand and eye, and elementary science.

THE promoters of the movement for the preservation of the Irish language (a very active body in Dublin) are making strong efforts to get the teaching of Irish encouraged under the new system, and especially to secure that the children of Irish-speaking districts shall be taught in Irish, not in English, as has been the absurd practice up to the present. It is more than probable that these changes will also be introduced.

IT is hoped that the new Department of Agriculture and Industries will help to continue the practical training thus begun in the general schools into complete technical and agriculture teaching. Through its Education Committee it will also be in touch with intermediate education. Captain Shaw, who has been appointed over the Technical Instruction Section of the Department, is recommended by Captain Abney as one of the ablest of the South Kensington staff. He has a good deal of knowledge of Irish education, and gave valuable help in the Manual Instruction Commission. Mr. T. P. Gill, the new Secretary to the Department, has much knowledge of education at home and abroad, and it is hoped will be of service in co-ordinating primary and secondary education with the scientific and practical teaching the Department will establish. These large reforms in the various branches of education give hopes of a better system than we have yet had in Ireland, in the future.

THE new buildings added to Alexandra College, Dublin, are now almost complete. They have a very handsome exterior, and within give much additional accommodation. The entrance-hall and staircase and the greatly enlarged and altered Jellico Hall (for meetings, &c.) are very picturesque. There are many new class-rooms, music-rooms and studios, and a cloak-room and gymnasium. It is hoped that the Queen or some of the Royal Family will consent to formally open the new buildings during the Queen's approaching visit to Ireland.

THE Board of Trinity College, Dublin, have altered some of the books on their course for certificates in teaching. No Psychology appeared on the former list. Professor Stout's psychology has now been added, and some old books, such as Milton and Locke's treatises on education, have been removed in favour of more modern works. The course is open to T.C.D. students who have passed through half the Arts course, and to graduates of other Universities; also to primary teachers under certain conditions. It consists of a first examination in books, which is followed a year later by one in practical teaching. This represents the first attempt made in Ireland to give public examinations and certificates in teaching in secondary education. The Royal University has also instituted such examinations, but their course is unnecessarily long and not well arranged.

FROM ABROAD.

THE annual report of the Council of Public Instruction of the North-West Provinces which we have received from Regina supplies most gratifying evidence of educational activity in this part of Canada. But some of the problems which press for solution are of peculiar difficulty. As Mr. Goggin, the Superintendent of Education says: "One of our most serious and pressing educational problems arises from the settlement among us of so many foreign nationalities in the block or 'colony' system. There are colonies of Swedes, Finns, Bohemians, Hungarians, Jews, Austrians, Germans, Russians, Icelanders, Mennonites, Galicians and Doukhobors. In addition to the foreign colonies, there are also exclusively French-speaking districts in Saskatchewan that, for a variety of reasons, have not been able to keep their schools in operation. In the interests of the children, as well as of the country at large, every means should be taken to encourage the opening and maintenance of schools among these non-English-speaking communities."

WE have received the report, for the year ending June 30th, 1898, of the Commissioner of the United States Bureau of Education Dr. William T. Harris, to the Secretary of the Interior. It consists of two bulky volumes of 2,640 pages, and is concerned not only with the different grades of education in the States, but with all phases of the problem of national instruction which were prominent in any country during the time under review. It is impossible for us to give an adequate idea of the thoroughness with which the Intelligence Department of the Bureau does its work, for a mere statement of the contents of this truly remarkable compilation would take more space than we have at our disposal. It may serve to give some indication of the wide range of subjects dealt with to say that pedagogic problems of countries as distant as Alaska and India are considered, and questions as diverse as "School Gardens in Russia" and "University Work in Chicago" are elaborately dealt with. We hope to have an opportunity in some future issue of discussing some of the subjects contained in Dr. Harris's report. We cannot help thinking, however, that the Bureau would do well to study the art of concentration. The tendency to diffuseness of American writers presses very hard on the educationist who strives to keep himself versed in all modern developments of educational activity.

AT the recent Convocation of the Punjab University, Dr. J. Sime said, in his convocation address, "in the Punjab there are now being educated in public and private institutions 261,097 young persons. Of these 228,892, or nearly 88 per cent. of the whole, are learning the barest elements in the vernacular, and with the exception of some 495 law and engineering students, and a few others under training as teachers, only 1,458, or less than 0 per cent. of the whole, have reached the collegiate stage of instruction. Of those of school-going age, both male and female, as many as about 92 out of every 100 are still without any education whatever, and those who have advanced beyond the school stage average about one in a little over every 14,000 of the population."

CURRENT HISTORY.

THE Transvaal War is constantly developing new phenomena of peculiar interest. We are increasing our Army; we are going to "treat the volunteers better;" we are talking of conscription as a resource more nearly possible than ever before. But an incident happened in Cambridge two or three weeks ago which is, perhaps, one of the most significant signs of the times. We know from our text-books how merciless Pitt's Government was towards those Englishmen who sympathised in the slightest degree with "the king's enemies" during the war against the French revolutionary government. Free speech ceased for a time to be a possession of the inhabitants of Great Britain, to say nothing of Ireland. Surely, therefore, the nineteenth century has seen an advance when in a university, in the full light of day, or rather of the electric light, a Boer can propose a motion in a debating society, asking "the House" to disbelieve in the alleged conspiracy to get rid of British influence at the Cape, when he can be listened to with fairness and courtesy, answered temperately and outvoted, it is true, but with no unseemly sign of triumph. It is true such things seem scarcely possibly as yet in London. But what Cambridge thinks to-day England will think to-morrow, and we have renewed hopes of our race.

Here is an object lesson. There were eighty vacancies in the second division clerkships in the Civil Service. To attract candidates, the Government offers to youths of seventeen £70 a year to commence with, and they can rise by easy stages till they will be, at about forty-five years of age, in receipt of the munificent salary of £250. To deter candidates, Government placed at the entrance to this paradise an examination in very stiff arithmetic, in history and geography, of which the range may be suggested when we give as a sample of the questions this:--Mark on a map the various rainfalls in (such places as) Australia, South America, &c. Besides these there were papers on the more technical requirements of clerks in such offices. Balancing the attractions and deterrences, some 1,500 to 2,000 British youths determined to attempt the narrow pass, and the whole range of marks attained was such that a candidate by 100 marks lost 200 places. Government employment has evidently strong attractions for the youths of this country, but knowing how competitive examinations have contributed to the degradation of Chinese intellect, the growth of the system here for every petty office cannot be regarded as an unmixed blessing.

DR. LEAF'S "ILIAD."[1]

Thirteen years have elapsed since the appearance of the first edition of Dr. Leaf's "Iliad," and a second edition will be welcomed by all Homeric students. The present edition is much more than a re-issue of the former with a few alterations. In fact, by the re-writing of large portions of the notes and the addition of an Apparatus Criticus, and Appendices, the volume, as the author says at the beginning of his preface, has grown almost into a new work. The Appendices, especially the second one on Homeric Armour, strike us as most valuable, but these require further notice.

According to Greek tradition, the "Iliad" and the "Odyssey," and various other poems, were the work of an historical poet called Homer. His birth, residence, and death were assigned to various places, but, apparently, no trustworthy facts are known concerning him. It has been doubted, indeed, whether he ever existed as an individual, or whether his very name is not a convenient resource to account for the existence of a great body of epic poetry treating of events that happened long before he was supposed to have lived, and written not by one man, but by a cluster of poets. Around the general question controversy has raged for centuries, and amid the conflicting views it is impossible to be certain of more than the general fact that such a body of epic poetry did exist, and that from the fifth century onwards nothing was known of any epic poetry other than that of the Ionic writers of Asia. In this connection Dr. Leaf, in his Prolegomena, brings out strongly the important fact that the poems, although of Asiatic origin by tradition, do not ostensibly show signs of this origin, and that, although the scene of the "Iliad" is, of course, laid in the Troad, its point of view is professedly that of dwellers in Greece proper; and he comes to the conclusion that epic poetry "had its roots in the Mykenean period, and that this true tradition of the departed grandeur was carried across the Ægean in lays which were the progenitors of the Homeric poetry."

The Homeric poems were handed down orally: hence the absence of a recognised and settled text in early times: hence the intercalation of various episodes, the evident work of various writers. The kernel of the "Iliad" is the "Μῆνις," or "Wrath of Achilles," which is contained in Books I., XI., XV., XVI., XX. XXII. These, with the exception of some accretions, are apparently the work of one author, whom we may call Homer; but further than this we cannot uphold the unity of the "Iliad," as held by the advocates of the "integrity" theory. For further information on this point we would refer the student to the short Analysis of the "Iliad" in the present volume, and to the valuable Introductions to the various books.

Now, whenever poems are handed down orally, intercalations and accretions must of necessity be found, and when at length they are committed to writing, there will be numberless variations both in the narrative and the text. Hence arises the need of an authoritative recension, a codification, an official copy. The task would naturally fall to Athens, and all tradition points to its having been undertaken by Athens in the sixth century. Who the person was who carried it out is more doubtful, but Dr. Leaf agrees with those who assign it to Peisistratos. In his preface, indeed, he says that "the only serious change in point of view between this volume and its predecessor is that involved in the full acceptance of the Peisistratean recension as an all-important factor in the constitution of the 'Iliad.'"

As regards the text, there is very little change from that of the first edition, and the few changes are of no great importance. The author is most careful in this respect, and the list of MSS. which he has quoted in the Apparatus Criticus is of itself a sufficient proof of the closeness and thoroughness of his labours The chief point in which he departs from tradition is the acceptance of *ἵωμι* for *ἵκωμαι* (of all MSS.) in IX. 414, a passage which has tried various commentators. We are not sure that Dr. Leaf is right here; there are *ἅπ. λεγ.* to be found in prosody and in syntax as well as in mere words. In the latter case he allows it in the difficult passage in X. 398, where he takes *σφίσιν* as = *ὑμῖν*. There is no other instance of this in Homer, the "free" use of the stem *σϝα* (as he says) being confined to the possessive *ἑός, ὅς* The latter point is fully and ably discussed in Appendix A.

With regard to syntax, there are many very valuable notes. In the first edition the author adhered too closely to the views of a certain commentator, especially with regard to the particles *κέν* and *ἄν*; in this edition he has, in several points, followed the suggestions of Mr. Bayfield, in conjunction with whom he brought out the School Edition of the Iliad, and whose help he specially acknowledges in his preface.

In the interpretation of individual passages there are clear proofs of the influence of a maturer judgment. Occasionally in the first edition there appears to have been a certain restraint; now the author has let himself go, and poured out more generously of his abundant store of Homeric knowledge. There is a freedom and originality about his work which will at once strike the student, and not only is this evident in dealing with passages, but also in the use of particular words; several of the well-known old epithets are set before us in quite a new light both as regards meaning and derivation, and the reasons for the alterations seem in most cases to be sound and convincing.

A point which is always interesting in Homer is the question of colour. In a long and interesting note on *κύανος* (XI. 24) Dr. Leaf observes that "the Homeric vocabulary for colour is very poor, and hardly distinguishes more than 'red' or 'dark.'" We should scarcely go as far as this, perhaps; but the Homeric colours are certainly, for the most part, vague. There is a good note on I. 350 in which the author says that there is very vivid truth in the contrast of the "purple deep" (*ἐπὶ οἴνοπα πόντον*) with the greenish grey of the shallow water near the shore (*ἐφ' ἅλος πολιῆς*); both these epithets, therefore, are applicable in the same line, and there is no need to read *ἀπείρονα* for *οἴνοπα*, as has been suggested. In II. 577 *νώροπα* is frankly given up as hopeless; it is doubtful, perhaps, whether all will allow the interpretation of *μιλτοπάρῃοι* (II. 637) as implying an actual face painted on the bows of a vessel with the cheeks scarlet as the nearest approach to flesh-colour, but we quite agree in thinking that there is very considerable doubt as to whether the epithet *αἴθωνες* (II. 839) means "of fiery courage," "sleek-coated," or "of a sorrel or brown colour."

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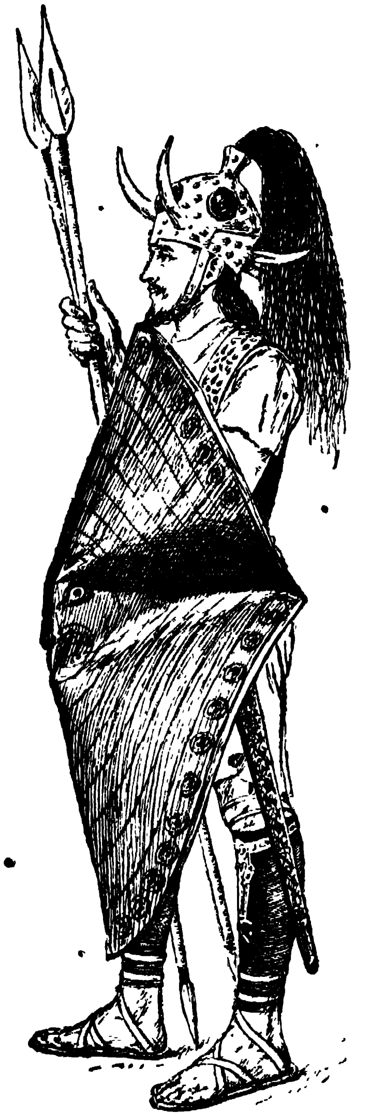
[1] "The Iliad." Edited with Apparatus Criticus, Prolegomena, Notes and Appendices, by Walter Leaf, Litt.D., some time Fellow of Trinity College, Cambridge. Vol. I. Books I.-XII. Second Edition. (London: Macmillan & Co., Ltd. New York, the Macmillan Company. 1900.) 18s.

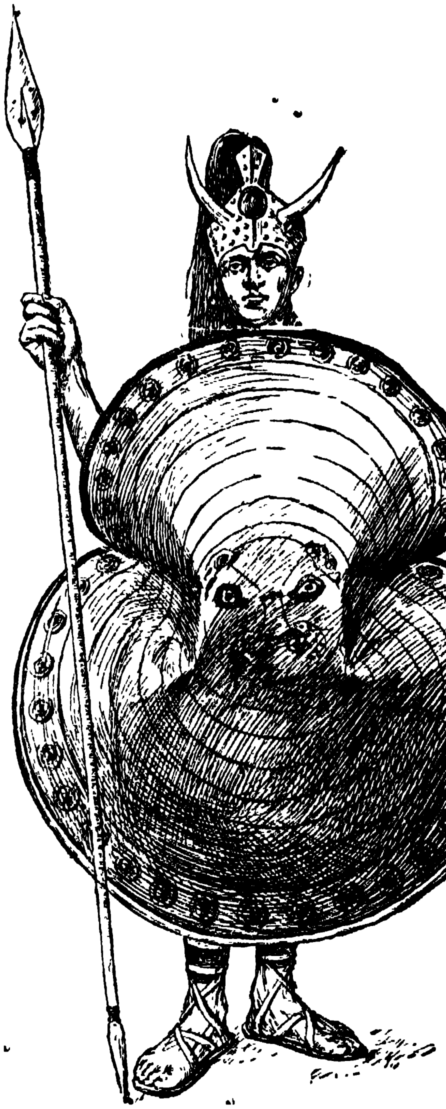
We have no space for further details, but a few words are necessary concerning the very valuable Appendix B, "On Homeric Armour." In some ways this is the most interesting part of the whole volume.

It is only since 1894 that the traditional views of Homeric armour have been altered · this was brought about by the appearance of Reichel's "Ueber Homerische Waffen." Dr. Leaf in the main agrees with the views therein expressed, and before proceeding to details gives a short outline of them. They may be summed up as follows: the armour of the Homeric heroes corresponds closely to that of the Mykenean age, as we learn it from the monuments; they wore no breastplate, their only defensive armour being the enormous Mykenean shield (which protected the sides as well as the front of the body) and the helmet.



When the Mykenean period had passed away, a complete change took place; the unwieldy shield was replaced, for purposes of mobility, by a small round shield and a corselet or breastplate: by the seventh century B.C., or thereabouts, the breastplate had become general, and no panoply could be thought of without it, but by this time the epic poems had almost ceased to grow. The Homeric shield, then, is almost invariably to be regarded as the large Mykenean shield (of which we reproduce two figures from the Appendix), or an alternative form, a rectangular oblong, bent into the form of a half cylinder, which answers to the "scutum" of later times. Both forms are found represented together on the monuments; the construction of the former is given at considerable length, and the author with great skill shows how the various epithets applied to it, and the various circumstances related in connection with it, are explained by the new interpretation of its build, shape, size and great weight.

But here we are confronted by the difficulty with regard to the *θώρηξ* or breastplate. If it was neither worn nor required with the large shield, why is it so often mentioned? It appears to us that it can hardly be *in all cases* a portion of an interpolated passage of later date or an anachronism, nor can we believe that *θώρηξ* (as Reichel, in certain passages, although sometimes with great hesitation, suggests) can be applied to anything else but the breastplate, and be made to mean "a piece of armour" such as the shield or the *μίτρη*. The whole question is very carefully discussed, and the student must form his own judgment.



The only other portion of the armour which we can here allude to is the helmet (*κόρυς*), with its two or four horns: both these types (*ἀμφίφαλος* and *τρυφάλεια = τετρυφάλεια*) are delineated in the two figures herewith given. The *φάλαραι* or bosses (whence the epithet *τετεαφάληρος*) are also represented, but these latter are imaginary, as no evidence for them has yet been found on the monuments.

We have only touched upon a few points, but what has been said will abundantly prove the value of this edition of the Iliad It is, of course, too expensive for use as an ordinary school-book; but for all advanced students, and for any teacher of Homer who wishes to be up to date, it is quite indispensable.

W. W. F.

RECENT SCHOOL BOOKS.

Modern Languages.

Malot, Remi en Angleterre. (A selection from *Sans Famille.*) Edited by Margaret de G. Verrall. xi. + 207 pp. (Pitt Press Series.) *2s.* Those who know Miss Verrall's edition of "Remi et ses amis" need only be told that in this volume also she displays sound knowledge of the language and the right feeling for what will give difficulty to a child, and how this difficulty is best overcome. The vocabulary has been compiled with great care, and it has therefore been possible to reduce the notes to twenty-four pages, for which teacher and taught will be thankful. There are very few slips in the printing, *e.g.*, *pous* for *pour* (p. 120). The designation of the parts of speech in the vocabulary seems to us altogether superfluous. When a child sees *honnête*, "honest," it surely ought not to require the information that the French word is an adjective.

A Compendious German Reader. For the use of Army Classes. By G. B. Beak, M.A. xi. + 217 pp. (Blackwood.) 2s. *6d.*—The arrangement of this book is exactly the same as in the case of Mr. Toke's "Historical Unseens," which we recently commended. This volume is not quite so satisfactory as its predecessor. The literary extracts are not as well chosen, and the proof has not been read with sufficient care. Only confusion can arise in the pupil's mind when he sees some passages in the old spelling and some in the new, not to mention actual errors. There are signs of haste also in the section "Lives of German Authors." The book might be used with advantage for unseen translation, if the text were carefully revised.

German Without Tears. Adapted from the French of Mrs. Hugh Bell. By A. H. Hutchinson. 64 pp. (Arnold.) *9d.*—It is hardly fair to apply any severe standard of criticism to a book intended for "The Nursery and Kindergarten," though one may reasonably doubt whether it would not be better to leave the study of a foreign language until the children go to school, however simple the method suggested may be. The little book consists of a number of short lessons, constructed with a very limited vocabulary, and depicting very simple scenes of child life. This is obviously the right way to set about teaching a foreign language to very little children, especially if the foreign language is used as much as possible, and the greatest care is given to correct pronunciation. The most serious objection to the use of the book is the addition of very ugly and inartistic pictures of children who are certainly anything but German. There ought to be no difficulty in finding an artist able to produce something far better than this, and for our children "only the best is goodenough."

Outlines of French Historical Grammar. By Alfred T. Baker, M.A., Ph.D. xiv. + 375 pp. (Dent.) 3s. *6d.* net.—Though the study of philology has for the specialist charms innumerable, for the average student it more often than not proves distressingly dry. While, therefore, philologists may not value this book, either for novelty of form or originality of matter, an attempt like Dr. Baker's to make the dry bones live will doubtless prove welcome to the man whose only reason for taking up the study is to score a few extra marks in an examination, or to improve his knowledge of a modern language studied from an interest in the language *quâ* modern. The general sketch of the history of the French language, which occupies some fifty pages, forms an admirable introduction to the rest of the book. An appendix containing seventeen typical extracts from old French literature of various periods enhances the value of the work, which is cheap, and appears to be fairly free from mistakes. But is Mr. Baker correct on page 33 in deriving *contre-danse* from the English "country-dance"?

Classics.

Cicero. Pro lege Manilia. By J. C. Nicol, M.A. xxvii. + 88 pp. (Cambridge University Press.) *1s. 6d.*—The editor adopts a course equally removed from two "fashions" in the making of modern school books, one the omission of all parallel passages which would throw light upon the author read, and the other the method of sparing the boy all trouble (and thought), as by prepared vocabularies and the like. This edition is to be recommended to those who want their forms to exercise common sense and learn something of the genius of the Latin language, as well as to "get up" the translation and allusions.

A Latin Verse Book. By A. H. Thomas, M.A. 213 pp. (Rivingtons.)—This book is excellently graduated from the production of single feet to the rendering of passages set in public examinations. Thus the whole verse-course of a boy in a preparatory school is covered. Useful hints for reference are given. Among the pieces is "The Walrus and the Carpenter," part of it being prepared, and the rest provided only with hints.

The Gospel according to St. Luke in Greek. By the Rev. Arthur Wright, M.A. xl. + 230 pp. (Macmillan.) *7s. 6d.* net.—If but little space is here given to this valuable book, the reason is that much of it is intended more for the lecture-room than the school-room. At the same time, it must be said that even in the school-room there ought to be some attempt at comparative study of the Gospels. Mr. Wright is an advocate for the "oral hypothesis," and argues for it with cogency. His introductory matter is very full of detail, and the various analytical tables are very interesting and useful. On page 25 we notice that he expresses his adhesion to the modern Kenotic theory. The notes on the language and matter are good, and will be of great service with a Greek Testament class.

Tales of Ancient Thessaly. By J. W. E. Pearce, M.A. xiii. + 118 pp. (Blackwood.) *1s.* This is a cheap and excellent reader for a third form, which would infallibly arouse the interest of every boy, or girl, in the class. Thus the stories of Cupid and Psyche, and of the baiting of Thrasyleon in the form of a bear by dogs, are distinctly more stimulating than the life of Cato or the battles of Cæsar. The book should have a large sale.

In the "Cambridge Series for Schools and Training Colleges" we have received *Vergil Æneid V.*, by A. Sidgwick, M.A., *Xenophon Anabasis V.*, by G. M. Edwards, M.A., *Cæsar, Book V.*, by E. S. Shuckburgh, M.A., and *Selections from the Tristia of Ovid*, by H. F. Morland Simpson, M.A. The characteristics of this excellent series from the Cambridge Press are now quite familiar, and these volumes will quite keep up its reputation. We note as fresh the illustrations to the book of Cæsar, and the marking of quantities and elisions in the earlier selections from Ovid. The notes and vocabularies are all that can be desired for a good understanding of the authors.

Isocrates: De Bigis. By W. J. Woodhouse, M.A. 56 pp. (Clive.) *2s. 6d.*—This small volume of the "University Tutorial Series" has been prepared specially for the Cape of Good Hope University Intermediate Examination next year, and is the first edition of the speech with English notes in the market. A full account of the orator and his writings is given, and the events which led to the composition of this speech are described, while the notes are full and exhaustive.

The Odyssey of Homer. Book XI. By J. A. Nairn, M.A. xxxvi. + 92 pp. (Cambridge University Press.)—This edition will be found, in introduction, notes and appendices alike, entirely illuminative. Grammatical and metrical uses are fully treated, and the latest results of philological study are incorporated.

Ovid. Metamorphoses I. and II., and Autobiography. By W. T. Peck, D.Sc. xii. + 234 pp. (Ginn, Boston, U. S. A.). 2*s.* 6*d.*—This book contains illustrations, sufficient and not excessive notes, and a vocabulary with references to the occurrence of words. The "word-groups" and etymological derivations are by no means in accordance with recent research. *Hic* and *hōc* on page 168 are wrongly marked.

Aeschylus: Prometheus Vinctus. By F. G. Plaistowe, M.A., and T. R. Mills, M.A. 96 pp. (Clive.) 2*s.* 6*d.*—This is a very full edition of the drama, in which no point seems to be left untouched. It should prove as useful as the rest of the series for examination purposes.

The Suppliants of Aeschylus. Translated by W. Headlam, M.A. 42 pp. (Bell.) Paper, 1*s.* Mr. Headlam has made a sustained attempt to amend this desperately corrupt play, and the attempt is throughout ingenious and frequently convincing. The translation of the resulting text is spirited and vigorous.

Edited Books.

Macmillan's English Classics. Johnson's Life of Dryden. By J. Peterson, D.Sc. 182 pp. 2*s.* 6*d.* *Johnson's Life of Pope.* By J. Peterson, D.Sc. 185 pp. 2*s.* 6*d.* (Macmillan.)—It is at least probable that Doctor Johnson never, in his wildest dreams of classic fame (if he ever had any after his experience of Chesterfield), faced the possibility of becoming a subject for schoolboys, dons, and examinations. But such he is to-day, and when his learned Johnsonese is as ably edited as in the two volumes before us, very well he serves this purpose. Dr. Peterson has had some assistance in both cases from the well-known annotator, Mr. C. D. Punchard, and their joint work is of an excellent quality. A comprehensive but severely condensed summary serves as an introduction to each volume; then comes the solemn rhetoric of Johnson himself; and then follow notes that are often brilliant, and always illuminative. For all school purposes these editions will be found to serve, and there are many who have long left school, and are touched with that interest in Johnson which Dr. Underhill's work and a recent edition of his "Lives of the Poets" bear witness to, who would be benefited by consulting these little volumes. The notes convince us that the stately periods into which Johnsonese naturally falls cover real learning and sometimes enshrine valuable facts.

Seventeenth Century Lyrics. By Felix E. Schelling. 314 pp. (Boston, U.S.A., Ginn; London, Arnold.)—An introduction which we may fitly term brilliant, and a selection which should justly be termed catholic, helpful notes, and no less than three indexes included in this volume, all go to prove how thorough and capable a scholar Mr. Schelling is. The lyrics are drawn from the writings of the period 1625-1700, and are as varied in tone and form as lyrics can possibly be. An anthology of this kind, while it does not by any means exhaust the subject, serves the very useful purpose of introducing even to the cursory reader many names that are rarely heard, and much poetry which lies buried in unsuspected quarters. It is by no means improbable either that song-writers in need of good words and virile compositions upon which to set the stamp of their art would find here much that would be profitable to them. Some of these Seventeenth Century Lyrics have been set, others deserve setting, to music. The difficulty of getting at them is removed by this useful and charming volume, which for its size is more completely representative of the period than anything we recollect, except Professor Arber's latest venture.

Notes on the Acts of the Apostles. Chap. i.-xvi. By E. A. Belcher and C. C. Carter. 48 pp. (Relfe Bros.) 1*s.*—These Notes are brief, pointed, comprehensive, and in every way calculated to assist schoolmasters who have pupils preparing for the Oxford and Cambridge Local Examinations. They are compiled by practical teachers who have mastered the art of making condensed knowledge interesting, while they sacrifice nothing to style.

Dryden's Hind and the Panther. By W. H. Williams. (Macmillan's English Classics.) 127 pp. (Macmillan.) 2*s.* 6*d.*—This edition of Dryden's celebrated poem is exceedingly well done in a very small compass. The introduction is wonderfully full, and the part of it which deals with the æsthetic and philosophical aspect of Dryden's work is sufficiently masterly to reward the attention of advanced students. A welcome feature is the inclusion of Dryden's address "To the Reader"—one of the most felicitous of his prose pieces. The notes necessarily deal with many ecclesiastical obscurities, but they are extremely valuable and clear. The volume is calculated to do much to popularise a closer study of Dryden than is usual.

Mathematics.

Algebra for Elementary Schools. Part I. By H. S. Hall, M.A., and R. J. Wood, B.A. 66 pp. (Macmillan.) 6*d.*—Easy paragraphs from Hall and Knight's "Elementary Algebra," occasionally re-written, and a new set of examples.

Elementary Trigonometry. By A. J. Pressland, M.A., F.R.S.E., and C. Tweedie, M.A., B.Sc., F.R.S.E. viii. + 314 + xxx. pp. (Oliver & Boyd.)—A trial of this book may be recommended. It has many good points, and looks as if it would work well as a class-book. The chapters on computation are quite unusually good and well arranged, the graphs and other figures are plentiful and clearly drawn, the useful method of projection is employed to prove the addition theorem; ambiguities of radicals are not ignored, and the treatment of the inverse functions is satisfactory. The first paragraph of Article 122 badly needs revision, and the sham "proof" (Article 69), that the sum of two tangents to a circle is greater than the minor arc joining their points of contact, should be eliminated.

Practical Plane and Solid Geometry. By J. Riddel. vi. + 328 pp. (Oliver & Boyd.) 2*s.*—A "Science and Art Stage I" text-book of a rather familiar kind. The solid geometry is not bad: the sequence is rather better than usual, and space is not wasted upon a host of trumpery problems all of the same type. The plane geometry is less satisfactory; many of the examples are neither practical nor instructive, and the author is apt to write with vagueness and even inaccuracy. Thus: "Parallel lines are such that if produced ever so far both ways they would not meet:" "1 = 96 or $\frac{1}{96}$;" "as $\frac{1}{8} = \frac{96}{8}$, $\frac{1}{8}$ in the scale represents $\frac{96}{8}$ of actual measurement;" "if several similar figures be inscribed within or described about another figure, they must be in contact with each other, at corresponding angles," and so on.

Science and Technology.

Magnetism and Electricity for Beginners. By H. E. Hadley, B.Sc. viii. + 326 pp. (Macmillan.) 2*s.* 6*d.*—Of late years many elementary text books have been published dealing with this subject. The one before us has features of its own that render it in many respects an improvement on its predecessors. On the whole it is thoroughly up-to-date. The notion of Potential is introduced at an early stage, and Faraday's conception of lines of force is used to illustrate both magnetic and electric phenomena. Some excellent diagrams, evidently taken from experimentally determined curves illustrating the combined fields of the earth and a bar magnet, appear on pages 65 to 67. As one would naturally expect from an old pupil of Professor Rucker, the subject of terrestrial magnetism is dealt with well and accurately. There are some familiar friends among the illustrations, but most of them are new; Fig. 149, illustrating Volta's experiment, is a vast improvement on the impossible one that has done duty in so many text books; in the form given in the figure the experiment may be successfully performed. One great blemish we note Experiment 160 is *not* a proof of Ohm's law; it assumes the law to prove it. The section on induced currents is on the whole well done. It seems to us rather a pity, however, that Faraday's original sequence of experiments is not given.

Elementary Practical Physiography (Section II.) By John Thornton, M.A. viii. + 208 pp. (Longmans.) 2*s.* 6*d.*—The syllabus of elementary science for candidates in the Queen's Scholarship Examination of the Education Department now consists of two parts. The book before us is concerned only with the second division of this syllabus, the subjects of which are divided between chemistry and astronomy. Any book which contains the necessary information for candidates wishing to satisfy the examiners must be, like all books on physiography as defined by the Science and Art Department, of a miscellaneous character. Mr. Thornton's book naturally divides at the end of chapter xii. The first twelve chapters continue the study of chemistry, which was commenced in a previous volume. Five more non-metallic elements and their compounds are here introduced as well as the general characteristics of the metals. Five chapters on some astronomical phenomena complete the volume, and in these the characters and movements of the earth, sun and moon are dealt with. The book is well printed and profusely illustrated, and as in other books by the same author, the text is clear and interesting.

An Introduction to Qualitative Analysis. By H. P. Highton, M.A. xii. + 170 pp. (Rivingtons.) 3*s.* 6*d.*—With plenty of time at his disposal a good teacher should find the 184 experiments which Mr. Highton has arranged very suitable for classes studying qualitative analysis. The first part of the course consists of 82 experiments on twelve typical metals and their compounds, together with the properties and products of decomposition of six common acid radicals; and this section is concluded by tables for the examination of simple salts of the metals previously studied. Parts II. and III. deal with the less common metals and acids in a similar manner, while Part IV. introduces the analysis of mixtures. For a boy who has already become familiar with simple chemical phenomena, and who intends to make a serious study of chemistry in later life, the practical exercises contained in this volume form excellent stepping-stones to more advanced work.

Practical Exercises in Elementary Meteorology. By R. de C. Ward. 195 pp. (Boston: Ginn & Co.)—We fear this excellent little book will find few readers in this country at present, although through no fault of its own. It is intended for use in secondary schools, and meteorology as a school subject is still practically unknown amongst us. We may express the hope that teachers may at least be induced to read Mr. Ward's book carefully, if only that they may again be impressed with the value of the subject as an introduction to elementary observational and inductive studies. For the book itself we have little but praise. Meteorological observations without instruments are admirably dealt with, and most books make far too little of this, just as they make too much of instrumental observations; as if the latter involved some special mystery. The principal service Mr. Ward has rendered is in expounding the methods of constructing and interpreting synoptic charts. Such charts are, or ought to be, the foundation of all meteorological teaching, and the material required has hitherto been rather inaccessible in form. For English schools many of Mr. Ward's examples would have to be replaced by others taken from our own charts, and charts of western Europe, and our colonies would serve some other purposes better than the United States. The use of illustrations drawn exclusively from the United States is natural and proper enough, but this should scarcely apply to the bibliographical notes, which recommend some books and papers of questionable importance, and make no mention of such names as Ley, Blanford, or Abercromby.

Elementary Chemistry. By Albert L. Arey. xii. + 271 pp. (New York: The Macmillan Company.) 4*s.* net.—Mr. Arey has followed the plan which Prof. Remsen's little book "Elements of Chemistry" has made familiar to British teachers of chemistry. At each step of the experiment, which the beginner is to perform from the instructions contained in this book, a question is set "designed to guide the student's inferences and to suggest a definite line of thought." The answers to these questions are to be supplied from the pupil's observations, and are not included in the volume. But many substances are introduced to classes in secondary schools, the properties of which cannot be studied by experiments adapted as laboratory exercises for ordinary boys, and Mr. Arey duly describes such subjects; his information concerning them has thus to be taken on trust. The result is a want of uniformity in treatment which, if there were no other reason, would probably stand in the way of the book's extensive use in this country. The orthography adopted will not commend itself to our teachers sulfur, oxids, chlorin, and iron sulfid, do not seem like the same bodies as sulphur, oxides, chlorine, iron sulphide. The book covers the course arranged by the New York State Board of Regents, which approximates to that of the Senior Locals with us. Though we cannot recommend the volume as a class-book we think it will prove a very useful addition to a teacher's library.

Miscellaneous.

Courtesy. By H. E. Norton. 214 pp. (Macmillan.) 1*s.* 9*d.*—This little volume is called "A Reader for Older Boys and Girls," and it will, if adopted widely, probably exercise a very beneficial influence upon the ideas Young England is all too ready to entertain upon the important subject of politeness. Probably no volume of this size was ever put together before in which the value of good manners was made so attractive as a subject. The topics treated extend over fourteen chapters, each of which is an admirably condensed body of sound teaching, neither mawkish nor high-flown, upon real chivalry. It is a book that deserves high praise and speedy adoption as a reading book.

How to Save our Private Schools. By Rev. J. O. Bevan, M.A. 24 pp. (To be obtained of the author.) 1*s.*—Private schoolmasters who have neither studied the Board of Education Act, 1899, nor thought over the probable relations of the new Board with their own particular schools, will find this reprint of Mr. Bevan's address given to the College of Preceptors very useful.

The Sleigh Bells. By A. Alexander. 8 pp. (Philip.) 1*s.* net.—This is an attractive musical drill for boys and girls which has all the admirable characteristics possessed by previous publications in the same series.

Kant and Spencer. By Dr. Paul Carus. 105 pp. (Kegan Paul.) 1s.—The editor of *The Open Court* is of opinion that Mr. Herbert Spencer does not do Kant justice. Those of our readers who are interested in philosophical discussions will find this little volume worthy of attention.

LONDON MATRICULATION, JUNE, 1900.

Monthly Test Papers. No. 4.

THE fourth of a series of five test papers covering the syllabuses of all the compulsory subjects of the London University Matriculation Examination, together with test papers in French, is published this month. Copies of any of the papers can be obtained in a form suitable for distribution in class. The reprinted papers are sold in packets of twenty-five at a cost of 6d. net for each subject. The papers may be ordered through a bookseller, or they may be obtained (post free) from the editors of THE SCHOOL WORLD, but in the latter case all orders *must be prepaid.* Copies of the papers which have previously appeared in this series can still be obtained.

Latin Grammar and Composition.

(1) Give the gender and genitive singular of—mus, iusiurandum, hiems, Jupiter, respublica, tribus, ilex; and genitive and ablative plural of—nix, servitus.

(2) Decline in the singular—celer, quisque, pervicax, Æneas, Ulixes.

(3) Give the principal parts and the meaning of—diligo, deligo, occīdo, occĭdo, orior, ordior, vinco, vincio, ferio, fero.

(4) Parse—ingredere, severit, verebare, memento, prodis, consuerit, ausim, fugiam, fugem, appelles.

(5) Compare—sacer, facile, dexter, vetus, par.

(6) Give some deponent verbs having perfect participles used passively.

(7) Classify the chief uses of the ablative case, and give examples.

(8) Explain the cases of the words in italics—(*a*) Pendemus *animis*; (*b*) Tendimus hinc *recta* Beneventum; (*c*) *Tanti* est; (*d*) *mea sententia*, in my opinion; (*e*) *composito*—rumpit vocem.

(9) (*a*) Tin and iron are found in Britain, but the bronze which they use is imported.
(*b*) As soon as Cæsar had fortified a camp to protect the ships, he set out to pursue the enemy.
(*c*) Cæsar discovered that for thirty days in the winter the Britons do not see the sun.
(*d*) The inhabitants generally live on milk and meat: their hair is dishevelled.

(10) Translate into Latin, putting it into oratio recta:—
He said that if he had been a coward he would have deserted them: for the city, he thought, would not easily be captured nor would the keenness of the cold abate.

Latin—Cæsar.

DE BELLO GALLICO, V. Ch. 8—14.

(1) Translate:
(*a*) Ch. X. Postridie . . . acceptum.
(*b*) Ch. XI. Subductis . . . præfecerant.
(*c*) Ch. XII. Britanniæ . . . numerus.

(2) Translate with explanatory notes where necessary:
(*a*) animi voluptatisque causa.
(*b*) vicies centum milium passuum.
(*c*) testudine facta et aggere ad munitiones adiecto.
(*d*) quas sui quisque commodi fecerat.

(3) Give the meaning of—pro re, admodum, talcis, fagum, bruma, promisso, tertia vigilia, vitro; and give as many of the Latin terms used by Cæsar to distinguish the various kinds of ships as you can.

(4) Give as fully as you can Cæsar's ideas of the geography of Britain.

(5) Parse and give the principal parts or cases of—pari, nancti, succisis, vetuit, deligit.

(6) Translate:
(*a*) Erat summa inopia pabuli, adeo ut foliis ex arboribus strictis et teneris harundinum radicibus contusis equos alerent. Sed postquam non modo hordeum pabulumque omnibus locis herbaeque desectae, sed etiam frons ex arboribus deficiebat, corruptis equis macie conandum sibi aliquid Pompeius de eruptione existimavit.

(*b*) Nox erat et placidum carpebant fessa soporem
Corpora per terras, silvaeque et saeva quierant
Aequora, cum medio volvontur sidera lapsu,
Cum tacet omnis ager, pecudes pictaeque volucres,
Quaeque lacus late liquidos quaeque aspera dumis
Rura tenent, somno positae sub nocte silenti.

English Language.

ADJECTIVES, ADVERBS, PREPOSITIONS, CONJUNCTIONS.

(*Literature*, 1660 *to present time.*)

(1) Define a Preposition and give examples to illustrate. What prepositions are used to denote cause? What preposition should be used after *averse*?

(2) How may Adverbs be classified? Write a note on the use of *yes* and *no.*

(3) Distinguish between Conjunctions and Conjunctive Adverbs. "An Adverb may qualify Prepositions and Conjunctions." Discuss this statement.

(4) What are the rules for the Comparison of Adjectives? What Adjectives cannot be compared? Distinguish between *farther* and *further*.

(5) Parse the words in italics—
(*a*) He has gone *a*-fishing.
(*b*) There are books *enough.*
(*c*) It is *both* true and sad.
(*d*) It is sad; *yet* it is true.
(*e*) You must *needs* wait.
(*f*) Come *near*, *that* I may touch you.
(*g*) He stood *near* the tree *that* was struck by *that* arrow.
(*h*) He has done it more *than* once.

(6) Distinguish between the use of the conjunctions *for* and *because*. In what ways may Interjections arise? What is the etymology of—*Zounds! Wellaway! Adieu!*

(7) When should the full stop be used?

(8) Analyse—

No voice divine the storm allayed,
No light propitious shone,
When, far from all effectual aid,
We perished each alone—
But I beneath a rougher sea,
And whelmed in blacker gulfs than he.

(9) Give the author's name and approximate date of the following:—"Rape of the Lock," "John Gilpin," "Hyperion," "The Seasons," "Lays of Ancient Rome," "Hiawatha," "Heroes and Hero-Worship," "Adam Bede," "Vanity Fair."

(10) Subjects for essay—
(*a*) Description of one of Dickens's works.
(*b*) Old English Sports.

English History.

(1603-1700.)

Not more than **eight** *questions to be attempted, of which one must be* **either** *Q.* **11 or** *Q.* **12.**

(1) What was the claim of James I. to the English throne? Discuss the value of other claims put forward in the latter part of Elizabeth's reign.

(2) Give an account of the relations between James I. and Parliament from 1603 to 1614.

(3) Trace the relations between England and Ireland from the accession of James I. to the death of Cromwell.

(4) Describe the political events of Charles I.'s period of personal government.

(5) Answer **any one** of the following questions on the Great Civil War:—

(i.) Give an outline of the course of the Civil War from 1642 to 1645.

(ii.) What was the *Solemn League and Covenant?* How were the fortunes of the two parties in the Civil War affected by it?

(iii.) Trace the rise and influence of the Independents during the Civil War.

(iv.) Mark the locality of the principal military events in (*a*) the civil war between Charles and his Parliament, and (*b*) Cromwell's campaign in Ireland. Give the dates.

(6) Attempt a character sketch of Oliver Cromwell, illustrating your views by reference to his home government and foreign policy.

(7) Notice the chief laws passed under the Earl of Clarendon. What were the disabilities of Dissenters in the reign of Charles II.?

(8) Trace the events of the reign of Charles II. which contributed to bring about the Revolution of 1688. Write a clear account of the trial of the Seven Bishops.

(9) Give an account of **one** of the following:—

(i.) The constitutional importance of William III.'s accession.

(ii.) The financial measures of William III.'s reign.

(iii.) The causes of the War of the Spanish Succession.

(10) Write brief notes on the following persons and documents:—

(i.) Bacon, Blake, Fairfax, Monk, Shaftesbury, Temple.

(ii.) *Act of Settlement, Bill of Rights, Instrument of Government, Petition of Right, Test Act, Triennial Act.*

(11) Draw a map of England, inserting the sites of the principal battles of the Civil War.

(12) Describe, with a sketch map, **either** Cromwell's campaign in Scotland **or** Monmouth's invasion.

Arithmetic and Algebra.

(*Including Stocks and Problems on Exchanges in Arithmetic, and Quadratic Equations in Algebra.*)

(1) Express $\frac{1}{17}$ as a decimal as far as 7 decimal places and show that 7 further places may be obtained by a simple multiplication.

Find the value of $\cdot\dot{2}8571\dot{4}$ of 3 qrs. 3 lbs. 8 oz + $\cdot\dot{2}\dot{7}$ of 2 cwt. 3 qrs. 11 lbs. + $\cdot\dot{3}0769\dot{2}$ of 1 ton 4 cwt. 1 qr. 14 lbs.

(2) A debt is paid in francs valued at $9\frac{3}{4}$d. each, when 25 francs 18 centimes are worth £1; what is the gain or loss per cent.? [Give your answer correct to two decimal places.]

(3) A man, holding stock in $2\frac{3}{4}$ per cent. Consols, sells out at $101\frac{3}{4}$ and re-invests in Metropolitan Railway Stock at 111; what must be the dividend paid by the Railway Company that his income may be increased by 25 per cent.?

(4) Simplify $(\sqrt{a}+\sqrt{b})^2+(\sqrt{b}+\sqrt{c})^2+(\sqrt{c}+\sqrt{a})^2$
$-(\sqrt{a}+\sqrt{b}+\sqrt{c})^2$.

Of a series of three numbers each is greater than the one immediately preceding it by a constant difference; show that the product of the first and third is less than the square of the second by a fixed quantity.

(5) Determine the factor common to x^4+2x^2-63 and $x^3+3x^2-7x-21$.

Prove that

$$(a+b+c)^3-a^3-b^3-c^3=3(a+b)(b+c)(c+a).$$

(6) Solve the equations:—

$$\text{(i.)}\quad \frac{x-2}{x-4}+\frac{x-1}{x-5}=2\frac{3x+4}{3x-5};$$

$$\text{(ii.)}\quad \frac{x}{4}+\frac{4}{x}=\frac{x}{9}+\frac{9}{x}.$$

(7) Simplify the expression:—

$$a-\cfrac{1}{a+\cfrac{1}{a-2}}+\cfrac{a}{a-1+\cfrac{a}{1-\cfrac{a}{a-1}}}$$

Find the square root of the product of
$a(x^2+1)-x(a^2+1)$, $ax^2+1-x(a+1)$ and $x^2+a-x(a+1)$.

(8) (i.) The difference between a number and its reciprocal is $\frac{8}{3}$; what numbers satisfy this condition?

(ii.) One root of the equation $2x^2+2bx+49=0$ is double the other; deduce the value of b.

(9) The area of a rectangular field is 4,800 square yards and the length of its diagonal is 100 yards; find its perimeter.

Answers.

(1) $\cdot05882352941176\frac{8}{17}$; 8 cwt. 2 qrs. (2) Loses 2·29%.
(3) $3\frac{3}{4}$%. (4) $a+b+c$. (5) x^2-7. (6) (i.) $4\frac{7}{27}$;
(ii.) ±6. (7) $\frac{(a-2)(a+1)}{a-1}$; $(x-1)$ $(x-a)$ $(ax-1$.
(8) (i.) 3 or $-\frac{1}{3}$; (ii.) $\pm\frac{21}{2}$. (9) 280 yards.

Geometry.

(*Euclid. Books I.—III.*)

(1) If two triangles have two sides of the one equal to two sides of the other, each to each, but the angle contained by the two sides of one greater than the angle contained by the corresponding sides of the other; then the base of that which has the greater angle shall be greater than the base of the other.

(2) The diagonals of a parallelogram bisect one another.

ABCD is a parallelogram; through any point E on the diagonal AC straight lines FEG, HEK are drawn parallel to the sides AB, BC respectively and cutting the sides of the parallelogram in F, G, H, K; show that if L and M, the middle points of AF and GD be joined, then LM is parallel to HC.

(3) Describe a parallelogram equal to a given rectilineal figure and having an angle equal to a given angle.

(4) If a straight line be divided equally and unequally the sum of the squares on half the line and on the line between the points of section is equal to twice the rectangle contained by half the line and the line between the points of section together with the square on the smaller of the unequal parts.

(5) The difference of the squares on two sides of a triangle is equal to twice the rectangle contained by the base, and the part of the base between its middle point and the foot of the perpendicular drawn from the vertical angle to the base.

(6) If from any point without a circle straight lines are drawn to the circumference, of those which fall on the convex circumference, the least is that which, when produced, passes through the centre; and of others that which is nearer to the least is always less than one more remote.

Find the least of all the straight lines which connect the circumference of a given circle with a given straight line which does not cut the circle.

(7) The opposite angles of any quadrilateral inscribed in a circle are together equal to two right angles.

State and prove the converse of this proposition.

(8) If from any point without a circle a tangent and a secant be drawn, then the rectangle contained by the whole secant and the part of it without the circle shall be equal to the square on the tangent.

ABCD is a square inscribed in a circle and the side AB is produced to P, so that PB equals BA; show that the tangent from P equals the diameter of the circle.

(9) Draw a common tangent to two circles.

How many such tangents can be drawn? Investigate the special cases when the circles (i.) intersect, (ii.) do not intersect, (iii.) have internal or external contact.

Show that when the circles intersect the common chord produced bisects the common tangent.

General Elementary Science.

Physical Questions.

(1) How would you show that different liquids have different co-efficients of expansion for a given increase of temperature? Define co-efficient of expansion.

(2) Explain fully how liquids become heated. To what useful purposes are these facts put?

(3) What is the unit quantity of heat? What experiments would you perform to show that 80 units of heat are necessary to melt unit mass of ice?

(4) State the laws of reflection of light. You are provided with a piece of looking glass, pins, and a sheet of paper; how would you prove these laws?

(5) What reasons have we for the assertion that ordinary sunlight is analysed by its passage through a glass prism?

CHEMICAL QUESTIONS.

(1) State exactly what you would do in order to show that chalk is insoluble in water, but is dissolved by carbonic acid.

(2) What are the properties of the substance formed when phosphorus burns in the air? Explain carefully the result of adding water to this substance.

(3) What does coal-gas consist of? What products are formed by its combustion, and how would you endeavour to prove your answer experimentally?

French.

I. Translate the following passages :—

La principale cause du mécontentement des indigènes, celle qui dans la seule île de Luçon les a fait se soulever avec un ensemble surprenant, c'est l'exagération des impôts. Une femme indienne, sans profession, sans propriété, est soumise à une taxe personelle de dix pesetas ou dix francs. Celle de l'Indien n'exerçant aucun metier, ne possédant aucun immeuble, est également de dix francs ; mais il lui faut, en outre, donner trente-cinq francs s'il ne veut pas ou ne peut pas travailler chaque année à l'entretien des routes, et cela pendant quinze jours.

II. Translate into French :—

When he came to Magdalen College, he wanted to see and to measure the elms. He was very proud of some elms in America, and he had actually brought some string with which he had measured the largest tree he knew in his country. He proceeded to measure one of our finest elms in Magdalen College, and when he found that it was larger than his American giant, he stood before it admiring it, without a single word of envy or disappointment.

III.

(1) Of what masculine nouns are the following the feminine forms :—*ânesse, ourse, tante, vache, marraine, impératrice.*

(2) Put into French :—(*a*) An old and toothless she-wolf : (*b*) Every four hours ; (*c*) He will not answer, whatever the question may be.

(3) Write adverbs of manner corresponding to—*sec, faux, gentil, énorme, bref, constant, lent, traître, récent.*

(4) Explain carefully the use of the present participle in French. How is a present participle distinguished from a participial adjective of the same form? Put into French :—(*a*) He went out laughing gaily ; (*b*) They are busy dressing themselves ; (*c*) I hear him playing the violin.

(5) Conjugate in the singular the present indicative and preterite of—*moudre* and *se lever*, and in the plural the future and present subjunctive of—*courir* and *se résoudre.*

JUNIOR OXFORD LOCAL EXAMINATION, JULY, 1900.

Monthly Test Papers, No. 4.

SIX test papers in the ten most popular subjects for the Junior Oxford Local Examination in July, 1900, have been specially prepared for us by teachers with a large experience of the requirements of the examinations. The fourth of the series is given below. Copies of the papers in any of the subjects can be obtained in a form suitable for distribution in class. The reprinted papers are sold in packets of twenty-five, at a cost of 6d. net. The papers may be ordered through a bookseller, or they may be obtained (post free) from the editors of THE SCHOOL WORLD, but in the latter case all orders *must be prepaid.* Copies of the papers which have appeared in the January, February and March numbers of this year can still be obtained.

Arithmetic.

(*Including Discount and Compound Interest.*)

(1) Simplify :—

(i.) $\frac{1953}{4557} - \frac{720}{3024}$;

(ii.) $8\frac{4}{9} \times 3\frac{3}{8} \div 12\frac{7}{38}$.

(2) Find the difference between the sum of $\frac{5}{8}$ and $2\frac{3}{5}$ and the product of ·0125 and ·24 ; and express $\frac{3}{11}$ of a pole as a fraction of $\frac{3}{40}$ of a mile.

(3) Multiply 3·642 by $4\frac{2}{3}$; and find the value of ·027083 of £1.

(4) How many houses can be built on both sides of a street half a mile long, if the average frontage of each house be 9 yds. 2 ft. 4 in.?

(5) Find the carriage of 154 tons 6 cwt. 1 qr. 21 lb. of merchandise at 13s. 4d. a ton.

(6) If $\frac{3}{8}$ of $\frac{2}{3}$ of a ship cost £216,000, how much will ·625 of it cost?

(7) If 10 rupees are equal to 3 dollars, 5 dollars to 24 francs, and 126 francs to £5, find, to the nearest penny, the value of a lac of rupees in English money. (1 lac = 100,000 rupees.)

(8) Find the compound interest on £5,400 for $3\frac{1}{2}$ years at 4 per cent per annum. Give your answer correct to the nearest penny.

(9) In a hundred yards' race A starts $2\frac{1}{4}$ yards behind scratch and is beaten by B, who has two yards start, by 1 yard ; if also B can give C 2 yards' start in the same length race, by how many yards can A beat C, both starting from scratch?

(10) What is the present value of a bill of £155 10s. due 8 months hence at the rate of $5\frac{1}{2}$ per cent. per annum?

Answers.

(1) (i.) $\frac{4}{21}$; (ii.) $2\frac{1}{3}$. (2) 3·222 ; $\frac{1}{88}$. (3) 16·997 ; $6\frac{1}{2}$d.
(4) 180. (5) £102 17s. $7\frac{1}{2}$d. (6) £540,000.
(7) £5,714 5s. 9d. (8) £795 15s. (9) $5\frac{11}{27}$ yards.
(10) £150.

Old Testament—Genesis.

(1) Relate the vision which appeared to Jacob at Mahanaim.

(2) How were Jacob and Esau reconciled?

(3) What was the reason of Jacob's second journey to Bethel? Relate what happened there.

(4) In your own words, describe the feud among the sons of Jacob.

(5) "Midianites merchantmen." Explain how this passage reveals the commercial conditions of the time.

(6) Draw a map to show the following places:—Bethel, Peniel, Mahanaim, Shechem, Hebron.

(7) What relations are seen to have subsisted between Syria and Egypt from the narrative in Genesis?

(8) "God who answered me in the day of my distress." Discuss this speech of Jacob's.

New Testament—St. Luke.

(1) "I beheld Satan as lightning fall from heaven." How was this connected with the Mission of the Seventy? Give the terms of their commission.

(2) "The light of the body is the eye." Explain the teaching of Jesus about this.

(3) Into what special sins did the Pharisees, Sadducees and Herodians respectively fall? Give an account of two of these bodies.

(4) Explain the parable of the Barren Fig Tree.

(5) What lessons are contained in the parable of the Unjust Steward?

(6) Draw a map to show the position of Capernaum, Nain, Tyre, Sidon, Chorazin, Bethsaida, Gomorrah, Jericho, Samaria, Cæsarea Philippi, Mount Tabor, Dan and Beersheba, and explain how each of them is mentioned in this Gospel.

(7) What are the special dangers attending "the unrighteous mammon"?

English Grammar.

ADVERBS, PREPOSITIONS, CONJUNCTIONS.

(1) Explain the use of Adverbs. How are they formed?

(2) How may Prepositions be classified? Give sentences containing *off* used as (*a*) a Preposition, (*b*) an Adverb, (*c*) an Adjective.

(3) Distinguish between Co-ordinating and Sub-ordinating Conjunctions. What difference is there between the conjunctions *for* and *because?*

(4) Compare the Adverbs:—well, nearly, badly. What Adverbs cannot be compared?

(5) Comment on the following sentences :—(*a*) He is neither lame, nor is his brother. (*b*) I only want sixpence. (*c*) You are better than me. (*d*) The wine tastes sweetly.

(6) Paraphrase—

Circles are praised, not that abound
In largeness, but th' exactly round:
So life we praise that does excel
Not in much time, but acting well.

(7) For essays—
(*a*) Presence of Mind.
(*b*) Discoveries and Inventions of the Century.

English History.

(1327-1399—General.)

Not more than **five** *questions to be attempted.*

(1) Trace in outline the relations existing between England and France during this period, bringing out clearly the following points :—
(*a*) The causes of the hostilities.
(*b*) The causes of the changes in the theatre of the war.
(*c*) The causes of the long intermissions of war at different times.

(2) Make out a genealogical table showing, in some definite order, such descendants of Edward III. as took a prominent part in the history of this period. Append a brief note about each person who appears in your table.

(3) Contrast the characters and falls of Edward II. and Richard II.

(4) Give some account of the Black Death and the Peasants' Rising, and explain the connexion between them.

(5) What do you know of the history of Ireland between the death of Henry II. and the death of Richard II.?

(6) Describe the position of the following places, and state shortly how they come into the history of this period: *Berkeley*, *Dupplin Moor*, *Flint*, *Halidon Hill*, *Kilkenny*, *Northampton*, *Otterbourne*, *Ravenspur*, *Smithfield*, *Winchelsey*.

As You Like It.

(1) Is the marriage of Celia and Oliver anything more than a cheap device for comfortably ending up the play? Give reasons for your view.

(2) Contrast Phebe, in her love making, with (1) Rosalind, (2) Audrey.

(3) Give the meaning and derivation of the following words.—priser, flout, point-devise, leer, bandy, mewling, purgation, convertites, warp, foil.

(4) Give the context of the following passages :—

The thorny point
Of bare distress hath ta'en from me the show
Of smooth civility.

Wherefore do you look
Upon that poor and broken bankrupt there?

The courtesy of nations allows you my better.

'Tis not her glass, but you, that flatters her.

God make incision in thee! thou art raw.

(5) Is there anything in Duke Frederick's character which makes his sudden repentance not impossible?

Geography.

CANADA.

(1) What provinces constitute the Dominion of Canada? Name the chief towns in each.

(2) Write a short account of the Canadian Pacific Railway.

(3) Describe the climate of Canada. Which part is the most thickly populated and why?

(4) Draw a sketch-map of the (Canadian) Rocky Mountains, marking the principal heights, the passes, and the sources of rivers.

(5) What are the chief sources of wealth and industries?

(6) Where are the following?—Cape Chudleigh, Great Slave Lake, Regina, Anticosti, Fort Churchill, Port Arthur, Niagara Falls, Saguenay River.

(7) What time is it at Quebec when it is 3 a.m. at Greenwich?

French.

(1) Translate into French :—
(*a*) I have given her the flowers he sent me.
(*b*) When he comes at half-past six, I shall go out for a walk.
(*c*) They called on Mrs. B. this afternoon. She has been very ill.
(*d*) The grocer had no oranges, but he had some fine apples.
(*e*) Such a man as that will never help you.
(*f*) Don't give him anything. He does not deserve (*mériter*) it.

(2) Translate into English:

L'Histoire de l'ordre de Malte est un ouvrage intéressant, mais un peu romanesque, par l'abbé Vertot. C'est à cette œuvre que se rapporte le mot si connu: *Mon siége est fait.* L'abbé avait déja commencé son histoire lorsqu'il écrivit à un chevalier pour obtenir des renseignements précis sur le fameux siége de Rhodes. Ces documents s'étant fait attendre, Vertot n'en continua pas moins son travail, qui était fini lorsque les notes arrivèrent. La conscience de l'écrivain ne se trouva nullement génée par les divergences qui pouvaient exister entre son récit et la verité, et il répondit à son correspondant, "J'en suis bien fâché, mais mon siege est fait."

(3) Give the singular form of *yeux*, *bestiaux*, *noix*, *chez eux*, *ils viennent*.

(4) Decline in full the "disjunctive" and "conjunctive" personal pronouns. Why are these names applied to the respective classes of pronouns?

(5) Correct the following sentences where necessary :—
(*a*) Je suis chantant un chanson.
(*b*) Il et je suis, les plus grand garçons dans notre classe.
(*c*) Nous n'avons pas vus votres livres.

(6) What are the primitive tenses of a verb? Give the second singular present subjunctive and present perfect indicative of—*savoir* and *suivre*, and the singular imperfect indicative of—*recouvrir* and *recouvrer*.

(7) For those only who offer "Colomba" (pp. 83-111).
(i.) Translate into English:
(*a*) p. 84, ll. 10-19. C'est presque . . . de votre caractère.
(*b*) p. 98, ll. 27-36. Pour réponse . . . entres les combattants.
(*c*) p. 108, ll. 12-19. Un autre proposait . . . . un grand verre d'anisette.
(ii.) Write notes on—*Savoir mauvais gré*, *être de sang-froid*, *passer chez*, *donner congé*, *avoir la langue bien pendue*.

(8) For those only who offer "L'homme a l'oreille cassée" (pp. 101-138).
(i.) Translate into English:
(*a*) pp. 103, ll. 21-29. Ce terrible homme . . . cette farce scandaleuse.
(*b*) p. 121, ll. 21-30. Au signal qu'il donna . . . . autour de Fougas.
(*c*) p. 135, ll. 6-15. La nuit fut agitée . . . . ne sortit guère du second place.
(ii.) Write notes on—*C'était à perdre la tête*, *il la tutoie*, *l'arme au pied*, *grasseyer*, *que veux-tu que ça me fasse !*

Algebra.

(*Including Indices, Surds and Ratio*).

(1) Simplify $4p-q[r-3\{q-p(-2p+q)\}]$; and find its value when $p=0$, $q=-1$, $r=4$.

(2) Divide $(3a-b+c)^2-(2a+b-3c)^2$ by $5a-2c$.

(3) Find the Lowest Common Multiple of

$$7a^3(a-3),\ 14a^2(a^2-9),\ 21a(a^3-27).$$

(4) Simplify :—

(i.) $$\frac{3-x}{x^2+2x-3}+\frac{2(x+3)}{x^2-4x+3}+\frac{1-x}{x^2-9};$$

(ii.) $$\frac{\dfrac{x^2}{y}+\dfrac{y^2}{x}+\dfrac{2y}{x}}{y+2-\dfrac{2y}{x^2}-\dfrac{4}{x^2}}\div\left(\frac{y}{x}+\frac{x^2}{y+1^2-1}\right)$$

(5) Solve the equations:—

(i.) $\frac{1}{6}(5x-2) - \frac{1}{10}(3x+2) = \frac{1}{12}(7x+1) + \frac{1}{15}(x-4)$;

(ii.) $\frac{x}{4} - \frac{5}{x} = 2$.

(6) At the present time a man's age is twice the sum of the ages of his two sons; four years ago the elder son was twice as old as the younger son, and in twenty years' time the father's age will be equal to the sum of his sons' ages; find the age of each.

(7) Obtain the Square Root of $x^4 - 3x^2 + 36 + 6x(x^2 - 6)$.

(8) Simplify $\left(\frac{a^3b}{c^3}\right)^{\frac{2}{3}} \times \sqrt{a^{-3}b^{\frac{2}{3}}} \div \left(a^{\frac{1}{4}}c^{\frac{5}{6}}\right)^{-2}$

Multiply $x^{\frac{2}{3}} + x^{\frac{1}{3}} + 1$ by $3x^{\frac{1}{3}} + 2 - 3x^{-\frac{1}{3}}$.

(9) Find the value of $\frac{3-\sqrt{5}}{3+\sqrt{5}} \times \frac{4\sqrt{5}}{\sqrt{5}-1}$; and solve the equation $2\sqrt{x+3} = \sqrt{x}+3$.

(10) If $a : b :: b : c$, prove that

(i.) $a+b : b+c :: a-b : b-c$;

(ii.) $\frac{a}{c} + 1 : a :: 1 + \frac{c}{b} : b$.

Answers.

(1) $4p^2 - pr + 3q^2 + 6p^2q - 3pq^2$; 7. (2) $a - 2b + 4c$.

(3) $42a^3(a+3)(a^3-27)$. (4) (i.) $\frac{4(5x+2)}{(x-1)(x^2-9)}$;

(ii.) $\frac{x^2}{2}$. (5) (i.) -3; (ii.) 10 or -2.

(6) Father, 40 years; sons, 12 years and 8 years.

(7) $x^2 + 3x - 6$. (8) $\frac{ab}{c}$; $3x + 2x^{\frac{2}{3}} + 2x^{\frac{1}{3}} + 2 - 3x^{-\frac{1}{3}}$.

(9) $10 - 4\sqrt{5}$; $x = 1$.

Euclid.

(*Books I.—III.*)

(1) Define a perpendicular, an acute angle, a circle and parallel straight lines.

(2) Bisect a given angle.

(3) If two triangles have two angles of the one equal to two angles of the other, each to each, and a side of one equal to a side of the other, these sides being adjacent to the equal angles in each; then shall the triangles be equal in all respects.

(4) The complements of the parallelograms about the diagonal of a parallelogram are equal.

(5) If a straight line be divided equally and unequally, the rectangle contained by the unequal parts and the square on the line between the points of section are together equal to the square on half the line.

(6) If from a point within a circle more than two equal straight lines can be drawn to the circumference, that point is the centre of the circle.

Or—The angles at the base of an isosceles triangle are equal, and if the equal sides be produced the angles on the other side of the base are equal.

(7) The angle at the centre of a circle is double the angle at the circumference standing on the same arc.

Or—The straight lines which join the extremities of equal and parallel straight lines towards the same parts are themselves equal and parallel.

(8) If two chords of a circle intersect, the rectangle contained by the segments of the one shall be equal to the rectangle contained by the segments of the other.

Or—Describe a square equal to a given rectilineal figure.

(9) Through the angular points A, B, C of an equilateral triangle ABC, straight lines are drawn making equal angles with the sides AB, BC, CA respectively; show that the triangle so formed is equilateral.

(10) The straight line joining the middle points of two sides of a triangle is parallel to, and equal to half, the base.

(11) ABCD is a quadrilateral inscribed in a circle; AB and DC produced intersect in F; show that if CF equals AC then BF equals BD. Also, show that if BE be drawn through B parallel to CD to meet the circumference in E, EC is parallel to AB.

(12) If equal chords of a circle cut one another, the sum of the squares on the segments of the one equals the sum of the squares on the segments of the other.

PRELIMINARY OXFORD LOCAL EXAMINATION, JULY, 1900.

Monthly Test Papers.—No. 4.

THE increasing importance of the Preliminary Local Examinations of both Oxford and Cambridge has made it necessary to take into account the work of the teachers engaged in preparing pupils for these examinations. We have, consequently, had six test papers in each of the seven most important subjects drawn up by experienced teachers, and the fourth is printed this month. Copies of the questions in any subject dealt with can be obtained in a form suitable for distribution in class. Particulars will be found on page 155, in connection with the Junior Local Examination.

Arithmetic.

(1) Divide six millions nine hundred and twenty-seven thousand four hundred and fifteen by four thousand and sixty-three; write the quotient in words.

(2) Multiply £13 17s. $2\frac{1}{4}$d. by 129.

(3) Reduce 614,372 ounces to tons, &c.

(4) (i.) Add together $1\frac{1}{8}$, $3\frac{3}{4}$, $2\frac{3}{10}$, and $5\frac{7}{20}$.

(ii.) Divide $1\frac{3}{5}$ of $6\frac{1}{4}$ by $2\frac{1}{15}$ of $11\frac{1}{4}$.

(5) Divide ·04284 by 2·8.

(6) If pencils cost 2s. 6d. a score, what will be the cost of 5 gross?

(7) Find the value of 5 tons 12 cwt. 2 qrs. of copper at £72 10s. a ton.

(8) Find the Simple Interest on £46 2s. 6d. for $6\frac{2}{3}$ years at 5 per cent. per annum.

Answers.

(1) 1,705. (2) £1,787 17s. $2\frac{1}{4}$d. (3) 17 tons 2 cwt. 3 qrs. 10 lbs. 4 oz. (4) (i.) $12\frac{21}{40}$; (ii.) $\frac{3}{8}$. (5) ·0153. (6) £4 10s. (7) £407 16s. 3d. (8) £15 7s. 6d.

New Testament—St. Luke.

(1) Write out, in your own words, the teaching of Jesus about importunate prayer.

(2) "Christians cannot be neutral." Why? And how does Jesus enforce this point?

(3) In what connection is Zacharias mentioned in this Gospel?

(4) Explain "the key of knowledge," "candle," "bushel," "candle-stick," "the finger of God," "burdens grievous to be borne," "queen of the South," "leaven of the Pharisees."

(5) Can you give any reasons for the statement that Jesus considered hypocrisy the chiefest and worst of social sins?

(6) Describe the organisation and work of a Jewish synagogue.

(7) What lessons follow from the parable of the Rich Fool?

English History.

(1660-1685.)

Not more than **five** *questions to be attempted. Credit will be given for maps or other drawings to illustrate the answers; but not more than one-fifth of the time allotted to the paper should be devoted to such illustrations.*

(1) Write one brief note about each of the following topics in the reign of Charles II.

(*a*) Two notable English writers.

(*b*) Two wars in which England was engaged.

(*c*) Two territories acquired by England.

(*d*) Two English statesmen.

(*e*) Two important foreign rulers contemporary with Charles II.

(2) Tell the story of **any one** of the following:—

(*a*) The Great Plague.

(*b*) The Great Fire of London.

(*c*) The Dutch in the Medway.

(*d*) Titus Oates's Plot.

(3) Give an account of the constitutional struggle in which the party names of *Whig* and *Tory* had their origin. Explain those names.

(4) Write a life of **any one** of the following: Algernon Sydney, Clarendon, Lauderdale, Monmouth, Shaftesbury, Sharpe.

(5) Mention five important laws passed during the reign of Charles II., and state briefly the object of each of the laws which you mention.

(6) Describe the state of Scotland during the reign of Charles II.

English Grammar.

PREPOSITIONS AND CONJUNCTIONS.

(1) What is a Preposition? Why is it so called?

(2) Parse the words in italics;—He went *down for* the third time, *but at* that moment one *of* the spectators, hastily stripping *off* his coat, plunged *into* the current *and* rescued him, *notwithstanding* the danger.

(3) Mention some Conjunctions which are used in pairs. What are they called?

(4) How do you distinguish Prepositions from Adverbs?

(5) Paraphrase—

> The crowd's wild fury sunk again
> In tears, as tempests melt in rain.
> With lifted hands and eyes, they prayed
> For blessings on his generous head
> Who for his country felt alone,
> And prized her blood beyond his own.

Robinson Crusoe.

(1) Where are—Pampeluna, Orinoco, Trinidad, Hull, Cape St. Augustine, The Groyne?

(2) Give Crusoe's account of the habits of the bear.

(3) What were the advice and warning of Crusoe's father?

(4) Contrast the conduct of the Spaniards and the Englishmen whom we meet with in the story.

(5) What behaviour and ideas, on Crusoe's part, strike you as particularly characteristic of the average Englishman of the lower middle-class?

Geography.

SCOTLAND.

(1) Draw a map of the east coast of Scotland, inserting ports.

(2) In what respects are the following places of interest:—Glasgow, Dundee, Perth, Staffa, Oban, Greenock?

(3) Describe the course of the Clyde from source to mouth.

(4) Give an account of the mountain system of Scotland.

(5) Mention six Scotch freshwater lakes. What has made the west coast so much indented?

(6) What makes the population of Scotland so small compared with that of England?

French.

(*Set Book, pp.* 40-52.)

(1) Translate into French:—

- (*a*) Are there any apples on that tree? Yes, I see plenty.
- (*b*) I like this book very much. Who lent it to you?
- (*c*) Eighty men were killed in that battle and eighty-five ran away (*se sauver*).
- (*d*) Her brother and his sister are going to Paris to-morrow.
- (*e*) How is your mother to-day? Much better, thank you.

(2) Give in full the interrogative form of the present indicative of—*être* and *aller*, and the negative form of the conditional of—*rendre* and *tenir*.

(3) Give as many rules as you can for the formation of the feminine of adjectives. Give two examples of each rule. What are the feminines of—*roux*, *sec*, *blanc* and *frais*?

(4) Translate into English:—

Lorsque ces enfants se *virent* seuls, ils se *mirent* à crier et à pleurer de toute leur force. Le Petit Poucet les laissait crier, *sachant* bien par où ils *reviendraient* à la maison, car en marchant il avait laissé tomber le long du chemin les petits cailloux blancs qu'il avait dans ses poches. Il *leur* dit donc: "*Ne craignez point*, mes frères; mon père et ma mère nous ont laissés ici, mais je vous ramènerai bien au logis; *suivez*-moi seulement."

(5) What are the present infinitive forms of the verbs in italics in the above extract? Parse *leur*. What is the difference between *ne pas* and *ne point*?

(6) Translate into English:—

(*a*) Le Petit Poucet, qui vit un rocher *creux* proche le lieu ou ils étaient, y fit cacher ses six frères, et s'y fourra aussi, regardant toujours ce que l'ogre deviendrait.

(*b*) Comme les bottes étaient fées, elles avaient le don de *s'agrandir* et de s'apetisser selon la jambe de celui qui les chaussait.

(*c*) Comme il n'en *pouvait* plus de fatigue, il s'endormit et vint à ronfler effroyablement.

Give in full the future of *pouvait* and the present perfect of *s'agrandir*. What is the feminine of *creux*?

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Use of the Lantern in Teaching.

It may interest such of your readers as desire to use lantern slides if I give a short account of what the Sheffield Branch of the Teachers' Guild has done in providing sets for the use of teachers. Their sub-committee has now some thirty-two sets of thirty slides each in circulation at a charge of sixpence for a week's hire of a single set. The slides have been carefully selected by members teaching in both primary and secondary schools, and are for the most part taken from the lists of Messrs. Wilson, Valentine, Yorke and Newton. The selection has in many cases been a very troublesome business, owing to the difficulty of getting representative sets. This is especially evident in History. The slides on the market are as a rule taken from text-books, and only in rare cases at first hand. Nothing, for instance, can be more futile than to exhibit old prints of historical portraits, when direct reproductions ought to be obtainable. To show how Elizabethan worthies appeared to eighteenth century eyes may be interesting, but it is very misleading. Geographical sets are the easiest to form and the most satisfactory in use. With the aid of Baedeker or Murray anyone can collect sufficient information to give interest to the pictures.

I should be glad to propose to our sub-committee that such sets as are not wanted by the local branch should be at the disposal of other members of the Guild or of teachers who would be willing to pay a moderate subscription. I am chairman of the sub-committee, and believe that there would be little difficulty in arranging a scheme of this kind, if only application be made for it.

The chief difficulty in the use of slides is the lantern. If hired it costs at least 10s., and this is in many cases prohibitive. If the lantern is to be used systematically it should be the property of the school. The cost will depend solely on the size of the audience and the nature of the slides. For about £3 one can get a lantern to be used with either incandescent gas or oil which will be powerful enough to give an 8 ft. disc clearly visible by fifty or sixty people. The cost of each exhibition need not be more than a few pence. With larger audiences the electric or lime light is necessary, and this demands a certain amount of skill in manipulation and more complicated fittings. With larger audiences a lens with a longer focus becomes necessary and adds considerably to the prime cost. With landscape photographs the longer the focus the better.

My own lecturing is chiefly on classical subjects; and if any of your readers desire to purchase sets similar to mine, the college photographer, Mr. J. E. Atkinson, will supply them from my negatives and from the stock of well-known makers. I have put aside a set on Ancient Rome, consisting of over thirty photographs of buildings, with a few plans and tables of dates and dimensions, which Mr. Atkinson will forward in a box on receipt of £2.

W. C. F. ANDERSON.

University College, Sheffield,
March 14th.

Alternative Course in English Grammar.

IN a notice that appeared in p. 109 of THE SCHOOL WORLD, dated March, 1900, a writer, who reviews the "Alternative Course of English Grammar" that I have lately written in four little books for use in primary schools, speaks favourably of the series as a whole, but takes exception to certain expressions which exhibit, as he considers, "signs of haste and careless composition." I will take each of his examples in turn.

(*a*) "In iv., p. 31, we are told that 'all verbs do not require a complement.'" Surely this is as clear in words as it is correct in fact. Some verbs do not require a complement, others do. Hence the distinction (which, so far as I know, has never yet been disputed) between verbs of complete and verbs of incomplete predication. Where is the error?

(*b*) "In vi., p. 44, the conjunction *before*, in 'the rain fell before we reached home,' is said to join *its own sentence* (?) 'we reached home' to 'the rain fell.'" The phrase *its own sentence*, which the reviewer has *italicised* and queried as if it contained something objectionable, is surely quite intelligible and quite correct. It means, of course, "the sentence or clause to which it belongs, or in which it occurs." What else could it mean? In the Latin grammar which I learnt, and which is still current, the following rule occurs:—"A relative agrees with its antecedent in gender, number and person; but in case it is construed with *its own sentence*." Now if a relative pronoun, which joins one clause with another, as a conjunction does, can be said to have a clause or sentence of its own, surely a conjunction like "before" can be said to have the same. But there is no need to quote from a Latin grammar. Let me quote from a few English ones. "The case of the relative is determined by the construction in *its own clause*" ("West's English Grammar for Beginners," p. 97). "In parsing a relative pronoun, its gender and number are the same as those of its antecedent, but its case is determined by *its own clause*" ("Gow's Method of English," p. 70). "*Whom*" is in the objective, because it is governed by the verb "met" in *its own sentence* ("Meiklejohn's Grammar," p. 75). Are we all wrong in saying that a joining word, such as a relative or a conjunction, has a sentence of its own? If so, it behoves the reviewer to show where the error lies.

(*c*) "In v., p. 40, we have the sentence, 'Here *fire* is subject to the verb *burns*, and *son* is the person addressed.'" The examples given by me are "Fire burns" and "Leave me, my son!" Is it wrong to say that *fire* (which means, of course, the noun "fire," since it is printed in *italics*) is subject to the verb "burns"? I think not. Perhaps, however, it is only in the second part of the sentence quoted by the reviewer that he sees anything objectionable. There it would have been better if I had written *stands for* instead of *is*, though *is* is sometimes used in this sense, *vide* Webster's large Dictionary. I do not think that many persons will be puzzled by the language that I have used. But I will alter it in the first reprint.

(*d*) "In vii., p. 9, an adverb is said to qualify a noun!" It would have been better if I had said *helps to qualify* instead of *qualifies*; for it is the "relative sentence" (this is the phrase used by Dr. Abbott in "How to Parse," p. 17) rather than the relative pronoun or relative adverb that qualifies the noun in the "principal sentence" (see Dr. Abbott again). But the reviewer appears to me to be a little unfair, though, of course, without intending to be so. If he will look again at page 9, he will find that I refer only to a *relative* adverb, and not to *any kind* of adverb, as his exclamatory remark implies. I may inform him also that I was vigorously attacked not long ago by another reviewer in another journal for having neglected to point out that an adverb, even a *simple* adverb, can qualify a noun—in such phrases as "*once* the possessor of, &c.," "*formerly* the possessor," "*no longer* an enemy," "*almost* an enemy," "*quite* a sensation," "the *down* train," "the *then* king," "*probably* a rogue and *certainly* a fool," "*undoubtedly* a perjurer," "*decidedly* a genius," &c.

I am glad to have received the criticisms published in THE SCHOOL WORLD; and in the first reprint I shall make the slight verbal amendments, in which I see that some improvement can be made. As regards the other points objected to by the reviewer, I am unable to understand what his objections are, and shall be glad if he will explain.

J. C. NESFIELD.

Ealing, March 1st.

I HAVE but a few comments to make on Mr. Nesfield's letter. I think that most authorities will agree that the fact referred to in (*a*) is correctly expressed by the sentence, "Not all verbs require a complement." With regard to (*b*), my point is this—a conjunction being "a word used for joining, and for no other purpose" (see the author's "English Grammar, Past and Present," p. 233), cannot belong to either clause. Of course conjunctive adverbs and pronouns do belong to the clauses they introduce, but not by reason of their connective functions. (*c*) People would not be puzzled by the statement "paper is a noun," yet every schoolboy is taught the incorrectness of such expressions. Lastly (*d*), may I once more quote from the author's admirable "English Grammar, Past and Present," (p. 89)? "Very often in such sentences the word *quite* is superfluous. If, for the sake of such ungainly phrases, we are to say that adverbs qualify nouns also, then what distinction between adjective and adverb would remain?" If a relative adverb "qualifies some noun expressed or understood in the principal sentence," how does Mr. Nesfield explain this statement (vi., p. 44):—

"I have not seen the house *where* you live. Conjunctive adverb joining its own sentence 'you live' to the sentence, 'I have not seen the house,' used attributively to qualify the *verb* 'live.'" I have italicised "verb."

YOUR REVIEWER.

OUR CHESS COLUMN.

No 16.

THE solution to the March game is:—

WHITE.	BLACK.
	23. R x R (Ch.).
24. Q x R.	24. R—K7 (Ch.).
25. K—Q1.	25. Kt—KB7 mate.
or 25. K—B1.	25. R—QB7 (Dis. ch.).
26. K moves.	26. R x Q mate.

The maximum number of marks to be obtained was 5. For prize-winners' names and scores up to date see below. I am glad that so many competitors like the "Pawn Puzzles." Of course, as far as money is concerned, the book is not a very costly one, but nearly all last month's winners have written expressing their pleasure in finding how useful the work is. I have seen scores of boys (and men, too!) lose games merely through not knowing how to manage their pawns in an end game. The comparative cheapness of the book enables me to award a considerable number every month. But the prizes will not always take this form. In respect of money value, our annual prize, a set of Staunton chessmen, is the best, but Staunton chessmen (or any other set) are of no use unless one knows how to play the game. Consequently most of the monthly prizes will be books of instruction. This month the prizes will be "Six Chess Lessons for Junior Players," by Mr. Tinsley, who, I believe, is Chess Editor of *The Times.* "Altogether admirable"; "excellent"; are two typical press comments on this book.

One competitor writes suggesting that the competitions be made harder. Well, there is something to be said for his side of the question, and I shall introduce an element of greater difficulty than usual, now and again. On the other hand, I want competitors to understand games of chess, and to be able to appreciate the value of each move. Now, in problems, we have positions that, as a rule, are impossible in a real game. I saw one the other day in which both White's bishops were on black squares. A good game is, or ought to be, an object-lesson in itself. What, for instance, could be more instructive than the way in which Black sacrificed his Queen in the game given last month? Yet my experience of young players tells me that even the sacrifice of the exchange is very rarely contemplated. After all, *position* is the thing to be aimed at. I might almost say, "Take care of the pawns and the pieces will take care of themselves." But, perhaps, that is a little too sweeping. Pawn "grabbing" is not always profitable.

I now give the game for this month

WHITE.		BLACK.	
1.	P—K4.	1.	P—K4.
2.	P—KB4.	2.	P—Q4.
3.	P x QP	3.	Q x P.
4.	Kt—QB3.	4.	Q—K3.
5.	P x P.	5.	Q x P (Ch.).
6.	B—K2.	6.	B—K3.
7.	P—Q4.	7.	Q—QR4.
8.	Kt—B3.	8.	B—Q3.
9.	Castles.	9.	P—KB3.
10.	B—Q2.	10.	B—QKt5.
11.	B—QKt5 (Ch.).	11.	P—B3
12.	Q—K2.	12.	K—K2.
13.	Kt—Q5 (Ch.).	13.	P x Kt.
14.	Q x B (Ch.).	14.	K x Q.

Strange as it may at first sight appear, White now can force a win in, at most, nine moves. How is it done?

RULES.

1.—Solutions to be sent on post cards.
2.—Give name, date, age and address. (Age limit, 21.)
3.—Solutions to be received on or before April 12th.
4.—Address:

The Chess Editor,
THE SCHOOL WORLD,
St. Martin's Street,
London, W.C.

Result of March Competition.

"Fifty Pawn Puzzles" has been sent to:—

C. F. Russell; F. C. Baker; J. Hess; D. Hopkins; A. H. Castle; J. Waddington; W. H. Inwood; J. Lidbetter; H. J. Ardley; J. H. Cove; A. Maude; A. M. Davidson; S. E. Hopkins; A. Bryne.

SCORE UP TO DATE.

(All last month's competitors received 4 points, not 3 as stated.)

Nine points: The above prize-winners (except C. F. Russell) and Messrs. Dick, Beck, Shillingford, Poyser, Mellows, Leonard, Kettle, Goulding.
Seven points: G. L. Read.
Six points: D. G. Wearing.
Five points: Messrs. Russell, Hall, Stone, Stapleton, Major.
Four points: Messrs. Spranger, Carr, Robinson, Frayling, Harrison, Francis, Dickinson, Poulter, Worswick, von Schubert, De la Mothe.

OUR CORRESPONDENCE TOURNEY.

Manchester Grammar School has won both games against Cheltenham College.

CALENDAR.

[*Items for the May Calendar must be received by April 16th*, 1900.]

April, 1900.

Sunday,	1st.	—Board of Education Act comes into operation.
Monday,	2nd.	—Apply for entry form for Oxford Local Examination. Return forms for Leaving Certificates, Scotch Education Department.
Tuesday,	3rd.	—Scholarship Examinations begin at Chigwell, Uppingham, and Warwick Schools.
Thursday,	5th.	—House Scholarship Examinations begin at Exeter and Oakham Schools.
Monday,	9th.	—Admission day at University College, Bangor.
Tuesday,	10th.	—Preliminary Examination of Pharmaceutical Examination begins.
Saturday,	14th.	Return forms (last day) for Whitworth and other Scholarships of the Science and Art Department.
Monday,	16th.	—Return forms for Senior Commercial Certificate of London Chamber of Commerce.
Wednesday,	18th.	—Forms may be obtained for Edinburgh University Local Examinations.
Tuesday,	24th.	—Admission day at Mason University College, Birmingham. Examinations for Scholarships in Classics, Mathematics, Natural Science, and History at Jesus College, Oxford.
Thursday,	26th.	—Prof. Schechter's Public Lecture at University College, W.C., 6 p.m.
Saturday,	28th.	—Evening Examinations of the Department of Science and Art begin.
Monday,	30th.	—Return forms for (*a*) Cambridge Higher Local, (*b*) School Examination at Liverpool University College; (*c*) Preliminary Examination of Royal Colleges of Physicians and Surgeons, Edinburgh; (*d*) Local Higher Certificate of Aberdeen University.

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The School World

A Monthly Magazine of Educational Work and Progress.

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FORM-MASTERS AND SPECIALISTS.

By F. E. Kitchener, M.A.

Late Headmaster of the High School, Newcastle-under-Lyme.

IN a former article, in The School World for March, 1899, the subject of "Reclassification" for special subjects was discussed, and incidentally the question arose as to the relative advantages and disadvantages of a special subject being taught by the form-master who knows the boys or by a specialist who knows his subject. In the present article it is proposed to deal further with this question; it is one which the principal of every secondary school has to solve for himself.

Let us first sketch the claimants whose merits are to be compared; let us consider a typical form-master and a typical specialist, although it must be confessed the perfect type is rare, and a hybrid with the characteristics of both in varying proportions is the common case.

The form-master is an educationist, who looks upon each boy in his form as a problem specially set him. He does not care so much what he teaches the boy as whether he trains the boy's mind and character according to the idiosyncrasies of his nature. He does not think of the development of his subject so much as of the growth of his individual pupil's mind. When the boy joins the form he is in an unknown land; every hour the master puts him under observation, accumulates his facts, applies his equations, and works out what the boy really is and how he has to be dealt with. He watches him under different subjects; a lesson in geography, let us say, reveals powers which a whole term's lessons in Latin and Greek would have given him no inkling of.

Of the varied subjects he teaches the form-master is presumably master of at least one, but he has little time to keep abreast with the advances of the subject, and where he was when he left college there he remains to the end of the chapter. He has many subjects to teach, some of which he had scarcely studied at all till he began to teach them, and therefore the mere preparation of lessons of this encyclopædic master fills up his spare time and leaves him no time for reading new books or making original research.

What time for thought he can spare from pressing work is absorbed by the intense interest in the art of education itself; and to this his private study, and his genius, if he has any, is directed.

On the other hand, the specialist is also an educationist, but it is to the teaching of his one subject that he is consecrating all his powers. He is not so full of the future of Brown mi. as of how his subject can be presented to his whole set of boys. His own is to his mind *the* subject in the whole world that is best worth teaching. It has never yet been properly taught, and it is his mission to make it the living reality he knows it can be made. He is not distracted by the work, and even amid the weary piles of notebooks he has time for some original research or thought. He can share his nascent knowledge with his highest pupils; his mind is not dead wood, but full of life; he is reading and thinking and living in his subject, and his boys feel the growth of his mind and grow in response to it.

These seem to be the ideal form-master and the ideal specialist, and we must assume that some at least of the virtues of the ideal are to be found in those whom we are now to compare.

We dismiss once and for all the lazy form-master (do we not all know him?) who comes down late to school without having opened his book, who cannot hear his history lesson without his eye upon the page, who does not care whether Smith's mind differs from Robinson's provided both boys sit still.

We dismiss equally the professional set-master (do we not all know him?) who walks into the room and gives his lecture and walks out of it as the clock strikes, and locks the door and thinks no more of his boys till the clock strikes for his lesson next day, who cares about his subject only for his own honour and glory, who never even feels sure of his boys' names term in and term out.

We can now sum up the advantages on either side of a fairly typical teacher of either sort.

The specialist has on his side knowledge of his subject and special liking for it; he has had time to work out a plan for teaching it, and he has a special interest in showing that his subject can be made an education in itself.

On the other hand, the form-master regards the subject as one of many which he has to teach, and has not more than a conscientious interest in it; but he knows his boys, and he never forgets them: he is never lecturing serenely on the latest discoveries of science while his audience are making imaginary cricket scores in their notebooks; he is exchanging thoughts with the idlest in the form, and his good-natured questions are satisfying him that the stupidest boy, whom he has chosen to gauge the clearness of his teaching, is not being left behind the others in lifeless and apathetic perplexity.

From a teacher's point of view, the advantage undoubtedly lies on the side of the specialist; from the general educationist's, on the side of his rival; and the result will have to be a compromise. The specialist will have to recognise that he must make his operations fall in with the general plan of campaign, while the form-master will be all the better teacher all round if, instead of being a sort of maid-of-all-work, he is allowed to be the specialist in something. A branch of teaching which perhaps has only been thought of second-rate or third-rate importance may be raised to a position of real power in the school if it be handed over to the teacher as its presiding genius. Geography, for instance, is a subject which everyone thinks he can teach, and which very few can teach. What can be more deadening than a geographical lesson as made by the ordinary mortal! The part of the globe under discussion seems to be as dry as an auctioneer's catalogue, and the children go away from their lesson with as little power to realise the life of the country, what it is, and why it is so, as they would gather from learning by heart the list of names in a postal guide. And yet a born teacher, even without the desirable help of lantern slides and modern luxuries, may, with coloured chalks and a *soupçon* of genius, make the country rise in his hearers' imagination like a bit of fairy land. Let someone, then, in each school make such a subject as geography his speciality, and throw his whole mind into it.

Nor will the pupils be the only ones benefited; to be teaching one subject, however low in the hierarchy of subjects, with all one's power, to rule supreme over a little Monaco in the educational continent, will leaven all the rest of a teacher's work.

> Est aliquid quocumque loco, quocumque recessu,
> Unius sese dominum fecisse lacertae.

I remember how years ago at Rugby, in the early days of science teaching in secondary schools, I, then a junior master and something of the Jack-of-all-trades, benefited by having entrusted to me (with the help of my colleague, the present Archdeacon of Manchester) to work out a scheme for teaching botany—a subject of which I then knew even less than of the other subjects I was teaching. I set to work at the new problem for which I had no cramping traditions to guide me, and in the effort, however unworthily, to play the specialist, I learnt in a few terms more of how to teach than I should have learnt in many years of the humdrum "teach as you were taught" system. After this fashion an ordinary master may be an extemporised specialist. But, after all, there is not room for all to become specialists: there are not subjects enough in a large school, or teachers enough in a small one; and here it will be seen that the size of the school is a great factor in the problem. In a school of five hundred, there is work enough (if the time-table can be so arranged) for more than one specialist in each branch, and blocks of pupils can be re-classified without putting them under teachers who know nothing of their subject; but in a school of fifty there cannot be specialists at all, and each man must "play many parts;" while in schools of more ordinary numbers, varying from one to two hundred, one specialist at most can be obtained in each subject, and either the pupils have to learn every subject in form as the same group of boys, however different may be their attainments, or, if they are re-classified, some of the sets have to be taught by men who know and perhaps care little for the subject.

It is in hitting the happy mean that the skill of the headmaster or headmistress will be found; but, even if the specialist has to be aided by unspecialised colleagues for the sake of contemporaneous teaching and the consequent simplification of time-table, yet a great deal may be done by conference between the teachers of each branch with the specialist for its presiding genius. Such conferences are most valuable in the subjects—arithmetic, for instance—where there is a beaten track, worn by the feet of generations, and the breath of one ever-new mind may electrify the dry bones of his colleagues into new life.

It appears, then, that an increase of numbers facilitates the employment of specialists; may we not hope that in the co-ordination of schools in the future this will be taken into account? For instance, in the case of small towns, where the boys' Grammar School and the girls' High School cannot be expected to exceed fifty or sixty pupils in each, is it not a great argument for having one dual school for both boys and girls, that then it will be possible to secure a specialist in each subject, at any rate for the upper forms? This consideration may be commended to the co-ordinating authorities, if we ever have them.

So far we have considered only the intellectual training, and not the moral discipline of the teaching. It cannot be ignored that, the powers of discipline being equal, it is a more difficult task for the specialist to keep order than for the form-master, and, where the capacities in this respect of the different specialists vary considerably, it is quite possible that the idler spirits will take advantage of the weaker masters. Hence, at any rate, in all but the highest forms, a judicious headmaster will leave sufficient of a boy's time in the hands of his form-master to ensure his character from deteriorating. It is not, however, by any means an impossible task for a specialist to hold his own, and instances will occur to everyone where the discipline in the German-master's or the science-master's sets has been as good as any in the school. Further, there are form-masters as well as set-masters who either cannot keep order, or at any rate let their idle boys do nothing. And though a boy may be damaged in character by being idle or truculent with some one specialist, the damage is nothing to what he suffers if he is taught everything by the master and is at standing feud with him. It is by no means one of the least recommendations of the specialist system that a boy does not carry all his eggs in one basket.

To sum up:

(1) For the teaching of the subject itself, a specialist is essential in the higher forms.

(2) For the purposes of general culture and moral training, forms below the highest should spend an appreciable portion of their time with their form-master.

(3) How far teaching by specialists can be carried through the school must depend on the size of the school, and on finance.

SECONDARY SCHOOL LIBRARIES.

By JOHN J. OGLE.

Librarian of the Bootle Free Public Library.

WERE the question, "Do you think a school library is educationally useful?" put to every principal, how few would dare to deny that it was, yet how many would have to answer with an apologetic negative the further question, "Have you, then, a library in your school?"

Excuses would probably be grounded on the cost, the master's want of time, the absence of a demand on the part of parents, the supposed provision of books elsewhere, or, in a few cases, on simple want of thought about the matter. Yet a library need not be large or costly to be good, want of time may be simply due to ignorance of how to set about the organisation of a library, and consequent misapprehension as to the amount of time it would consume, while lack of demand would excuse the absence of much that is for excellent reasons already supplied by the schoolmaster; and whatever provision of books there may be out of school, it is usually entirely beyond the schoolmaster's influence, and may be quite unsuited to the scholar's needs.

WHAT HAS BEEN DONE.

To prove that it is easy to establish secondary school libraries this paper has been written, and to attract attention to the need and desirability of them.

By the kind courtesy of the principals and librarians of ten well-known public schools, I am able to give many interesting particulars of existing libraries of this class. The following is a list of the schools referred to, with a statement of the number of volumes in each:—

Royal High School, Edinburgh	10,000
Haileybury College ...	8,500
Wellington College ...	8,500
Marlborough College (Adderley Library)	8,180
Leys School, Cambridge	3,000
Sedbergh School ...	2,400
Central Foundation School, London ...	2,000
Mill Hill School	1,000-1,500
High School, Nottingham	1,300
Kingswood School (Junior School only)	200

Haileybury, besides the books mentioned above, has ten house libraries of boys' books for taking out. The Adderley Library at Marlborough College was founded as far back as 1848 by Mr. F. Alleyne McGeachy, and is open to boys in the sixth and the various divisions of the fifth form of the Upper School, as well as to the Army class, the fifth and the engineering class in the modern school. Of the Wellington College library 2,500 are for lending and 6,000 for reference use. There is also a very good library at Liverpool College which is well used, especially by those boys who come out well in the recognised secondary school examinations. Doubtless a systematic enquiry such as the Education Department might well undertake would reveal a widespread activity in the providing of secondary school libraries in this kingdom, though hardly, it is to be feared, such as is known in the United States schools of higher education.

According to the Report of the Commissioner of Education of the United States Government for 1893-4, in 6,892 public and private high schools then existing in the States, there were three-and-a-half millions of library books. These figures yield an average of 500 volumes per school. From the detailed tables it appears that 446 secondary school libraries have 1,000 or more volumes, and an additional 333 schools have 500 or more volumes in each library. State Library Commissions are a feature of the American educational system. They exist in New Hampshire, Vermont, Massachusetts, Connecticut, Georgia, Ohio and Wisconsin, and part of their duty is to advise schools as to the establishment of school libraries and the method of their management. Some of these Commissions hold teachers' conferences to stimulate interest in library work. This movement is spreading into other States.

The older British Universities for centuries have understood the need for libraries as the necessary laboratories of literary study, and have met the need more or less thoroughly, while every newly-established University College has its library as an integral part of the College establishment. Even the elementary schools under the Education Department for years have been urged to establish school libraries, or at least to get into vital connection with public free libraries where they exist. Thousands of volumes are now regularly circulated in these schools every year. Is it not remarkable, then, that few voices have been raised in behalf of the establishment of libraries in schools of intermediate education? This is a subject to which the new Board of Education might usefully devote some attention.

Practical Considerations.

Let us now turn to practical considerations. In establishing a school library the first question to be considered is that of means. The chief sources of support in the schools from which returns have been gathered are (*a*) bequest; (*b*) gifts; (*c*) subscriptions of scholars. The Adderley library, an example of a bequest, has already been mentioned. Many of the books have been given at Mill Hill School, Sedbergh School, Haileybury College and Wellington College, and a few at Edinburgh High School. There are terminal subscriptions for library privilege, at Nottingham High School of threepence, at the Central Foundation School, London, of sixpence, and at Haileybury College of two shillings and sixpence per scholar. Wellington College makes a voluntary charge of ten shillings per annum in the bill, Mill Hill School has no charge, but every boy on leaving presents a volume to the library, and a charge of one shilling and sixpence or two shillings per term is made for the use of the reading-room. This reading-room has an interesting history. It is the scriptorium in which Dr. Murray began work on the great Oxford Dictionary, a building which he gave to the school on severing his connection with it—a connection of fifteen years as an assistant-master. At Sedbergh School the governors make grants out of the discount on school books allowed by the bookseller. The library of the Edinburgh High School is supported by annual grants of money from the School Board.

Where funds are available for the purchase of books the choice is rightly left to the headmaster, or settled by consultation of the staff of masters, including the librarian, who is usually an assistant-master.

A committee elected by the school governs the library at Mill Hill, and a committee of masters and boys at the Central Foundation School, London. At Kingswood School the library is in the care of a prefect. The house-masters have charge at Haileybury College. Where there is a librarian, naturally he is assisted by sub-librarians chosen from among the boys, at least in large schools.

Definite hours are usually fixed for the issue of books to scholars: at Haileybury College these amount to six per week, during which a master is present. The Leys School, Cambridge, allows one book per week to its scholars. Generally, school libraries are only open after school hours.

Classification of Books.

In a school library of moderate size a very simple method of arrangement, issue and record is all that is necessary. An *accession register* of all books given or bought should be kept, and a progressive accession number given to each volume as it is entered. This number should be plainly written on the title-page of the book at the same time. A simple system of classification of the books should from the first be adopted, one that can be carried to greater detail as the library grows in extent. The following is a good division of subjects:—

A. Works of Reference and of a general character.
B. Philosophy and Religion.
E. Biography.
F. History.
G. Geography and Travels.
H. Social Sciences.
L. Other Sciences and Useful and Fine Arts.
X. Language.
Y. Literature.
Yf. Fiction.

This is the first classification of Cutter's expansive system with his symbols. For further information about classification reference may be made to Brown's "Manual of Library Classification" (Library Supply Co., London). As the books appear on the shelves they will not bear immediately consecutive numbers, but no inconvenience will arise if the distinctive class letter and accession number be plainly written on an adhesive book-tag attached to the back of each book.

The books in the library should be catalogued as they are added, each work on a separate card of uniform size; and as cataloguing is an art, the librarian would do well to obtain Quinn's "Manual of Library Cataloguing," a companion volume to the work already named, and, like it, of small price.

The Issue of Books.

A special *issue-book* is not necessary where the following method of record is adopted. Obtain a stock of numbered white cards with duplicates of a yellow or other tint; have them headed

BLANKTON COLLEGE LIBRARY.

Name of Scholar *No.*

and ruled in three columns for day of issue, number of book borrowed, day of return. The requisite entries are to be made on both the white and the tinted card, one (say) the tinted one, being filed or kept in a drawer by the librarian, the other taken by the scholar with the book. A few simple rules may be found necessary, and these may be printed on the back of these cards. It is always possible, with this system in use, to know in whose hands any absent book is, and to keep a superintending eye on the course of any boy's reading. A scholar who for a time does not wish to take out a book gives in his card, which is filed or put away with its fellow in the proper place.

Conclusion.

The subject of the proper choice of books for a school is a wide one, and may well be left for another occasion; but a word in conclusion may be allowed on the power of the school library as a factor in education. Under ordinary conditions this is both stimulative and recreative, but that power cannot fully be brought out except by a large infusion of the "seminar" method of education in the upper classes of secondary schools.

What is this method? It is indicated by a passage reprinted in the Education Department's "Report on the Connection between the Public Library and the Public Elementary School" (Eyre & Spottiswoode), which I had the honour to prepare for publication in 1898: "The plan of procedure is as follows:—The teacher assigns a certain number of topics, giving at the same time the titles of books and magazine articles which are to be consulted. Separate topics may be assigned to separate pupils. The class may be divided into sections, and each section given certain work, or the entire class may be given the same subject. It is an excellent plan for teachers and librarians to prepare special catalogues containing lists of books and magazine articles arranged under the various topics. In this way the yearly repetition of much work may be avoided . . . the required volumes are placed on reference shelves, or in alcoves to which the students have free access. The matter which pupils have gathered is then presented in recitation, the student using an outline. The teacher makes such suggestions and criticisms as seem necessary, and in the review the entire class is expected to be prepared on what has been presented."

These are the words of Mr. Orr, teacher of science in the High School, Springfield, Massachusetts. He also says, "Teachers who have followed the system are enthusiastic in its praise . . . the children quickly catch the spirit of the investigator, the spirit of the seeker after truth, and thus become students in the best sense of the word."

With these pregnant words I close.

PIONEERS IN EDUCATION.

By FOSTER WATSON, M.A.

Professor of the Theory and Practice of Education in the University College of Wales, Aberystwyth.

V.—Immanuel Kant: Philosopher, Educationist.

KANT'S lectures on education were given by him as part of his professorial work in the University of Königsberg. During the latter part of the eighteenth century, lectures on education were given in the German universities, before the subject of education was differentiated and became in itself the subject of a separate chair. It is to this system we owe the educational lectures of Kant, Fichte and Herbart. In the case of the last-named, it would seem to be doubtful whether eventually his influence as an educational thinker will not be more considerable than that as a philosopher, strictly so-called, noteworthy as his philosophical position was. But it cannot be without interest to the teacher of to-day to realise that Kant, the great epoch-making German philosopher to whom Fichte, Herbart and Hegel owe so great a debt (however much in thought they diverge from him), wrote on education, and in certain ways with the leading and light not unworthy of his philosophical greatness.

With Kant, the first and the last thing to realise is the magnificent significance of the work of education. For the would-be teacher there is surely no pre-requisite so important as the conviction of the value of the work in which he is engaged. Indeed, the discouragements, the failures, the drudgery, and at times the monotony of teaching in school work, require the blessed background which a martyr has for the faith that is in him. Indeed, if teaching is to become what it might be, education must be to the teacher a religion. As Kant puts it, "The prospect of a theory of education is a glorious ideal, and it matters little if we are not able to realise it at once. *Only we must not look on the idea as chimerical, notwithstanding the difficulties that stand in the way of its realisation.*"

Kant, indeed, declares that the greatest problem and the most difficult to which man can devote himself is that of education. But whatever the difficulties, we are obliged to think the matter out. "Our idea must in the first place be correct." Because the present systems are inadequate, we must above all things rise above them. "Suppose lying to become universal, would truth-speaking on that account become nothing but a whim? And the idea of an education which will develop all man's natural gifts is certainly a *true one.*" In short, Kant maintains that "*the mechanism of education must be changed into a science.*"

To show how necessary it is to establish a science of education, Kant cites a single principle which the educational theorist will wish to see soundly based, but which the practical teacher is likely, by force of circumstances, to overlook or ignore. "Children ought to be educated not for the present, but for a possibly improved condition of man in the future; *i.e.*, in a manner which is adapted to the idea of humanity and the whole destiny of man." The empiricist ordinarily educates so that, however bad the world may be, the pupils may adapt themselves to the present conditions. Even as a political matter this theoretical conception has great value. For the young, if educated to higher ideals than at present obtain, will meet half-way the measures which a progressive government brings forward. But government in advancing the interests of the ruled progresses too slowly for education to wait for it. Academic bodies, even, do not readily advance educational ideals, except in particulars. "The management of schools, therefore, ought to depend entirely upon the judgment of the most enlightened experts."

Looking upon the practical aims of school education, Kant summarises them as attempting to develop mental powers through discipline, culture, discretion, moral training. By discipline is meant the self-restraint which conquers our animal nature, whereby unruliness is brought into order. In culture is included information and instruction with a view to ability which may adapt itself to circumstances as they arise. Out of culture arises discretion, which is the refinement of ability into manners, courtesy, and with a view to serviceableness towards ends. But it is not enough that a man be fitted to accomplish ends. "His dicipline must be so trained that he shall choose none but good ends." For this he requires what is often neglected, the most important of all training, moral education. For training in morality, according to Kant, training in thinking is an indispensable requisite, because it is through thinking that we come to act on fixed principles. Now moral actions consist in the exercise of self-determination, and evidently in its fulness of development must come late on in education. Early education, therefore, whilst it must consist in restraint of the freedom of the child, yet it must be such a restraint as is not incompatible with helping him to use his freedom aright. To give oneself up to the universal moral law is the more easy to the man who has been under the rule of an external, objective authority. All such an one has to do is in the fulness of time to exchange the external law of authority for the internal law of reason. For this is the path of independence. "Thy service is perfect freedom." So Kant urges the child should be made to feel early the inevitable opposition of society, that he may learn how difficult it is to support himself, to endure privation, and to acquire those things which are necessary to make him independent. It is for this reason he advocates the public-school training rather than private tuition.

It will thus be seen that, although Kant writes on the subjects of physical education, instruction (culture), cultivation of the mind, he regards these rather as means to moral culture, and this again as inadequate unless it is applied to practice. Nevertheless, Kant says words of value on physical and intellectual education, though he does not regard them as final ends in themselves. In physical training he especially follows his predecessor, Rousseau. Mothers should themselves rear their children. Swaddling clothes and rocking chairs, leading-strings, go-carts, stays, are not to be permitted. Children should be guarded from effeminacy on the one hand and too great a hardening process on the other, for such treatment leads to self-indulgence or to roughness or unruliness by reaction. And it is these hidden effects on the soul that Kant bears in mind. Early education is to be (after Rousseau's advice) chiefly negative. Make the child natural, preserving him from what is harmful. Let regular times be observed for eating and drinking; let discipline begin betimes. Kant gives no systematic account of discipline, but merely offers a number of isolated counsels such as the mistake that is made in yielding to the crying of children, or the folly of the custom of the time in Germany in making the child kiss the hand of the parent after a flogging. Children should not be addressed, "Fie, for shame," and so on, for the child as yet has "nothing to be ashamed of, and ought not to be ashamed." Over-caressing makes children bold and even insolent. Obedience is the great virtue of childhood. Children should be treated reasonably, *i.e.*, they should not have their wishes, as wishes, considered, for this method *spoils* them; nor should they be thwarted unnecessarily, for this leads to repressed anger. It is by suggestions of this nature that Kant hints at, rather than expresses, the spirit of dealing with children on the physical side so as to induce a mental discipline.

Such education is, as he says, mainly negative. The positive side of physical education consists in what we should call physical exercise and training of the senses. Here, again, Kant closely follows Rousseau. The child should learn to measure by the eye, to tell the time by the position of the sun, or the way in the forest by a compass, or to cross a river by swimming instead of in a boat. The main point is to cultivate natural ability. This is best done by such instruction as renders the child's own mind and body active. Physical education, therefore, in the training of the body should be directed to the use of voluntary movements and the organs of sense. The end of all such instruction is to develop strength, skill, quickness, and self-confidence. It is not necessary to follow Kant through his enumeration of the exercises. Amongst games he recommends "blind man's buff," spinning tops, swinging, kite flying, and so on.

In both discipline and instruction the social element needs training. Kant quotes Rousseau: "You will never get an able man unless you have a street urchin first." This has its truth, but it is just as true that the child should learn: "We need not be troublesome to one another; the world is large enough for all of us." It had been a favourite doctrine with writers on education that everything should be learned by way of play (the school was a *ludus literarius*). "This is," says Kant, "an utterly preposterous notion." Work always differs from play in that it has an ulterior end in view. Training, if it means anything, involves the exercise in effort to attain the power of activity and restraint in following self-chosen ends. It is of essential import, therefore, that the child should learn to *work*.

I shall not follow Kant in his treatment of school intellectual education. Vogt has pointed out that the curriculum is scrappy and unorganised. Nor shall I deal with Kant's psychology of attention, memory, understanding, judgment, reason. The question of the material of instruction has been dealt with more fully and systematically by later writers.

But one point Kant insists upon has only just begun to receive the attention it deserves. He urges that "the inferior faculties have no value in themselves; for instance, a man who has a good memory, but no judgment. Such a man is merely a walking dictionary." So the educational value of object-lessons and the training of sense-observation has been ridiculously over-estimated. Sense-observation should be cultivated, but not at the expense of higher powers of imagination and reasoning. Such cultivation may be so thorough as to lead to what is called ***arrested development***.

Natural training, which may be said to include physical and mental training, must always be subordinate to moral training. For the former is chiefly passive, whilst moral training is, to Kant, active. The child must always understand the principle of an action and its relation to the idea of duty.

It is in the Metaphysic of Ethics that Kant develops his philosophical system of moral culture. What he says in his "Lectures on Education" is in accordance with this treatise, but he does not in the latter treatise pause to establish philosophically his view of morality. He assumes that moral culture must be based on "maxims," not upon discipline or instruction. "Maxims" are delivered by the reason to the will. Hence the necessity for the child to grow up into an enlightenment of reason which will illuminate and purify the springs of action. Two maxims which Kant has declared as postulated by the reason are well known, viz., (1) So act as always to treat humanity, whether in thy own person or that of another, as always an end, and never as a means only. (2) So act that thy action might be willed universally. Now we only rise to the contemplation of such maxims from having formed certain plans and certain rules, and strictly adhering to them. Hence the child ought by the time of manhood, through obedience in childhood, by discipline and instruction, to have reached such a development of reason that his actions are based on principles which are referable to maxims established by the reason. It is in this way that character is formed. For character can only be based on right actions. These must be grounded on right principles, and these again based on maxims which appeal to universal reason. "Character consists in the firm purpose to accomplish something, and then also in the actual accomplishing of it. *Vir propositi tenax*, said Horace, and this is a good character."

Kant, therefore, lays down the sequence, obedience in childhood, discipline and instruction in school, mental culture, development of reason—all leading to the idea of a moral law founded on maxims supplied by reason, and to a will bent on obeying the moral law in its best manifestations in the concrete activities of life. But to the mind of the educator these processes are unified, and are not to be considered as isolated, except for the purposes of analysis.

Kant's great merit as an educationist is the suggestion of the uniting of the whole educational process—the effort to realise in oneself and to help others to realise the "good will," for the "good will" can alone of all things in the universe be called "good" absolutely in itself. All other things are "good" only relatively to it. This, therefore, is the final end of man, and as such is the final end of education. The test of education is the degree in which it helps to the formation of character. Kant's methodising and treatment of of the material instruction as means to the end are weak and inadequate. But no man has done a greater work than Kant for education, in the insistance on a supreme awe and reverence for the moral law in the practice of life as the ideal end towards which all the educator's efforts are but well or ill-directed means.

To catch the spirit of Kant's views is to realise that, to that great man, education seemed to imply on its theoretical side a philosophy, and to be on its practical side, as I have said, a religion.

HOW TO USE THE RAW MATERIAL OF HISTORY.

By F. BEATTY.

Joint-author of "Over-Pressure," &c.

THE duty of the teacher of history is to provide children with material for the exercise of their natural capacities of sympathy and right judgment. It is emphatically not to present the child with his own or other people's conclusions; neither is it to offer a mere catalogue of events, however important in their ultimate bearing. All effects, whether mental or physical, are the results of definite causes, therefore history teaching should proceed as strictly as natural-science teaching along lines of natural development. Realisation of the distinctive characteristics of dominant race types is the guiding line which will enable the child to follow intelligently the devious windings of the maze of human action. It is possible to bring young children to this realisation by means of the wise and timely use of legendary lore and the raw material of a nation's art, which alone can make the dead past live again.

The permanent needs of man, food, shelter, ornament, clothing, intercourse--social, intellectual, moral--give us a basis in the natural order of time. His desire for power, land, wealth, dominion, his aspirations, his selfish or unselfish hopes and fears, are mind processes which govern every intricacy of laws of supply and demand, all changes in architecture, art, literature and legislation, all the activities of diplomacy, war and religion. Pre-historic man, hollowing his dwelling in the rock, has a motive in common with a Brunelleschi or a Wren. The blood-wite is a ruder form of the present death penalty, and its progress from immediate personal retributive justice to the modern judgment by peers is directly traceable through time. The most intricate political movement, the most complex modern machinery of mind, is but an enlargement of this original circle of human desire, part of the evolutionary process from the simple to the highly differentiated. But the child understands the simple, not the complex. He is moved by the victories of self-sacrifice and love when he cares nothing for the founding of a European order, or the political and theological subtleties which spring from the shock of race interests, and consequent necessity for self-assertion and arbitrary law. The motives governing human life and thought are much the same in all ages, but not all periods and circumstances reveal these motives equally clearly to the child's understanding; therefore the first duty of the teacher is to select material which responds directly to the intellectual curiosity of his class. The race has had its childhood, youth and adolescence, and provides us with annals of each period from which to select.

The chief types in modern European history are the Celt, Roman and Norseman. What the child needs primarily are clear mind-pictures of each. He must be able to recognise and distinguish the one from the other by his appearance, works, preferences and ideals. In order to do this it is essential that anything of the nature of philosophic speculation or abstract reasoning be excluded from history instruction till a somewhat late period. Definite ideas of the physique, food, shelter, clothing, ornament, social and religious customs of each of these great race types, must be given. When this is accomplished, the teacher has laid a foundation capable of supporting the entire superstructure of Western civilisation. If there are practical difficulties in the way of such a treatment of history, we have at least enlisted the eager interest of the children in the work. Let any who doubt this natural interest try the effect on a class of children from eight to ten of a simple story given in the primitive language of some monastic annal, with all its original wealth of detail and descriptive power.

Happily, for the first year, or even two, the teacher is not hampered with examination requirements. He may prepare his ground at leisure, well assured that the value of this preparation will become more and more apparent as the primary ideas of the first year are gradually supplemented by more orthodox presentment of the sequence of modern history.

In the first place, the children's minds must be prepared for the idea, which is strange to them, of distinctive types; encouraged to express their own observations about people, the teacher will easily elicit from them that there are many varieties of physical type. He may suggest that the way people live, and what they do, affects their appearance. Comparison may be instituted between the soldier and sailor as active, and the scholar and student as reflective types. These again may be shown to differ from hand-workers; from the farm labourer, slow, strong, patient, and the factory hand, alert and anxious. The people who have lived before must have had the same marked differences of type between their warriors, teachers and workers. We would know something of them, but it is only when we are really clear about four things that we can be said to know any people:—(1) What they look like; (2) what they can do; (3) what they like; (4) what they think right or wrong.

From this we proceed to actual representations of one or other of the three chief types, *i.e.*, to our first effective use of original material. Beginning in the natural order with the Celt, as large a reproduction as can be obtained of the bust of the celebrated "Dying Gladiator," or the Gallic Warrior from the column of Antoninus, should fix the attention of the class, while passages descriptive of the warrior type from original MSS. should be read and explained by the teacher, and questioned and commented on by the class. Experience has taught me the value of these detailed descriptions in impressing a type on the mind. I have always found children eager for the minute descriptive detail of Celtic hero tales, and have succeeded, by means of them, in giving a young class quite definite ideas of the dominant golden-haired and large-limbed Celtic type. English versions of all the most interesting Celtic hero-tales and poems are available for this purpose in Prof. O'Curry's "Manners and Customs of the Ancient Irish." It may be urged that children for whom Medb and Emer, Cuchulaind, Ferdiadh, Ailill and Conaire Mor, live as fair-featured and nobly-proportioned beings, have only the heroic type in mind; but it is an objection which might be urged with equal cogency against a conception of the Greek type, taken from the marbles of Phidias, and therefore scarcely valid. Fuller acquaintance with the habits and customs of a primitive people will correct any tendency to exaltation of the type.

From the physical appearance we pass to the works of the Celt—primitive weapons, pottery, houses, forts, and rock carvings. Here illustrative material is copious. Professor Wood-Martin's "Pagan Ireland" alone furnishes numbers of plates which can be enlarged to serve as illustrations and as drawing copies for such members of the class as can attempt them. The various uses of these objects, as described in the original tales and poems, never fail to interest and enlighten. For Celtic houses and forts I used a picture of the cylindrical houses, with cup-shaped roofs from the Column of Antoninus, and Du Noyer's picture and plan of the Fort of the Wolves at Fahan. For the interior of a Celtic house, copious selections from the Courtship of Créde and Cael (Book of Lismore, Professor E. O'Currey's Lectures, col. ii., vol. iii., p. 13), and from the "Mesca Uladh" (Lebor-na-h-hidhre, p. 19, col. i., vol. ii., E. O'Currey's "Lectures").

The race preferences are easily and most interestingly traced in the many expressions of exuberant delight in colour, ornament, story, song and sport, which we find in all Celtic MSS., from the pre-patrician hero-tales to the later achievements of the Irlando-Anglo-Saxon miniature paintings. Engravings of brooches, budhne, torques, discs and rings, have an unfailing attraction for children, and I have watched with interest a class of children of eight to ten anxiously endeavouring to transcribe the curious and characteristically Celtic designs of Irish rock carvings, or the pottery ornamentation from Central European lake dwellings. The children were of course unaware that they were dealing at first hand with the primitive sources of western art: but the teacher knew that a year or two later, when they come to examine the beautiful work of the eighth century illuminators, the exquisite interlaced design common to all Celtic art will be familiar and recognisable in its deep significance as an example of persistence of race characteristics through large internal development and changed external conditions. Celtic love of colour and fine needlework may be shown to a class by reproductions of marginal illuminations, and by stories such as that of Maistu broidering the cross upon the breast of Aengus, by the quaint legend of the coloured winds, the many descriptions of the use of dye stuffs, and the detailed accounts of the dress of heroes, which occur in all the early tales. Here indeed the teacher's difficulty is an *embarras de richesses*.

But for race ideals, or primitive religious aspirations, the way is not so plain. Ogham stones, "leachts," carns or barrows, are doubtful pegs on which to hang conjectures of a people's ceremonies or religious customs, but the narratives of Cæsar and Strabo are definite enough as to the power and functions, if not the doctrines of the Celtic priest. By following him in his capacity of teacher, healer, law-maker and arbiter, the ethical superiority of a monotheistic over a polytheistic people becomes easily apparent when the children subsequently compare stories from Roman mythology and the Eddas with early Celtic hero-tales and poems.

It is impossible in a short article to do more than indicate the main lines of a method which aims at familiarising children with the art, arms, customs, ideals, and preferences of the chief race types, and success depends very largely on the actual material selected for each lesson and the manner of its treatment. But one may affirm, in conclusion, that the happiest results are achieved by close adherence to the natural methods of the childhood of the race, which make a curiously direct appeal to the understanding of a child. For each type the same method must be followed: actual objects or illustrations, described by the original stories and poems of the race. For illustrative material of the Celtic and Norse period I am personally deeply indebted to Messrs. Wood-Martin's "Pagan Ireland" and Paul B. Du Chaillu's "Viking Age," as well as to the clever fingers of a colleague who has enlarged and coloured such weapons, ornaments and pottery as I have wished to present more impressively than by means of plates or the use of lantern slides.

Aids to History Teaching.—"It is hardly necessary to say that everything that gives reality to the conception which the pupil gains from his study of books is a valuable device in the teaching of history. Models, coins, plans, and the rest serve as objective attainments to much which might otherwise fade away for want of definite hold; and such models as the pupil constructs with his own hands, or such other illustrations as he acquires by his own exertions, are, of course, far more effectual than anything which owes its origin to the teacher."—P. A. Barnett in "Common Sense in Education and Teaching," (p. 267). (Longmans.)

THE STUDY OF "AS YOU LIKE IT."

By J. A. NICKLIN, B.A.
Assistant-Master in Liverpool College.

II.—The Characters.

THE characters of "As You Like It" may be grouped in various ways. Some of them are entirely romantic and belong only to the setting of the story, *e.g.*, the two Dukes, Oliver and the old retainer, Adam. There are others whose classification is open to question. Thus, Silvius and Phebe are sometimes treated merely as the conventional lovers of romance, Phebe the typical "Arcadian coquette," and Silvius "the hapless swain" of an artificial pastoral school. But it is possible, as will be seen, to assign them to a different place. The play, it has been already said, is a study of different phases of love, and it is possible to discover in this pair a distinct phase or species. There is another group consisting of various rustic types, like Audrey and William. Jaques and Touchstone belong to a different interest. They are instances of the reflective temperament, offering a certain kind—differing according to their particular idiosyncrasy—of criticisms of life. It is a proof of the reality of Shakespeare's characterisation that his people are capable of being combined in so many relations; they cannot be made cut-and-dried specimens.

It will be seen that the most important characters have many different points of contact with the rest.

ROSALIND.

Rosalind is, of course, the centre alike of action and sentiment. The play is built up round her. When she first appears, she is in distress, and our sympathies are drawn to her because of her pathetic situation. But though her spirits flag for a moment, at the challenge of her cousin she "forgets the condition of her estate," and begins to "devise sports." Her wit answers to every call, and is ready on every occasion. Alike when she is shocked by the cruel accidents to the three young wrestlers, when she first feels that her affections "take the part of a better wrestler" than herself, when she believes that Orlando has come to the forest, and is impatient to know the truth, in all the circumstances of her fantastic courtship, whether disappointment (Act III., sc. 4), or suspense (Act V., sc. 2), or what not, even when she faints at the sight of her lover's blood, her wit is unfailingly triumphant. If it were not an ungracious comparison, one might say that she is among Shakespeare's heroines what Falstaff is among Shakespeare's unheroical men—pre-eminent by the freshness and exuberance of her wit. But it is the wit of unsullied and beautiful youth, not far from tenderness and love. When she comes upon the stage, it has been said that she wins our sympathy for her distressed condition. It should be noted, too, that when she puts aside her melancholy and falls to devising "sports," her thoughts turn immediately to a girl's first interest: "Let me see; what think you of falling in love?" She is pitiful; it is Orlando's desolate condition that turns her heart to him. When she hears of the poor old man and his three sons, she is moved almost beyond words. But she is young, and those who are young in heart as well as in years take the world lightly. She brushes aside the painful impression with a jest, and allows curiosity to get the better of her natural repugnance to scenes of violence. "But is there any else longs to see this broken music in his sides? . . . Shall we see this wrestling, cousin?" She shows delicacy in persuading Orlando from the wrestling. "Your reputation shall not therefore be misprised; we will make it our suit to the duke that the wrestling might not go forward."

She is essentially frank and unconventional, feeling herself, perhaps, above convention, both by birth and character. Of course this attitude is intensified by her transformation into a boy. When she first meets Orlando in this disguise, she whispers to Celia, "I will speak to him like a saucy lackey, and under that habit play the knave with him" (Act III., sc. 2). Celia is a little scandalised by the freedom with which her cousin discharges the shafts of her wit. "You have simply misused our sex in your love-prate" (Act IV., sc. 1). It is, however, only with Orlando that she plays the forward, whimsical boy. To others she gives the impression of pride, self-respect, and modesty.

She is very human. We have seen her overmatched by curiosity. She is also capable of feeling jealousy—jealousy that any woman should presume to treat a lover with more pride and coldness than she can bring herself to show to Orlando (Act III., sc. 5, &c.). She is a good daughter, but she does not reveal herself to the banished Duke, and she asks, "What talk we of fathers, when there is such a man as Orlando?" (Act III., sc. 4).

ORLANDO.

Orlando is a character of action rather than speech or thought. The world presents no problem to him except how to come by his own and win his love. He inspires a devoted attachment in his father's old retainer, and his natural gifts of courtesy and intrepedity are recognised at once by such a bitter enemy as his brother, and by an unbiassed observer like Duke Frederick. The simple goodness of his heart will not allow him to judge harshly of the world. "I will chide no breather in the world but myself, against whom I know most faults" (Act III., sc. 2). Optimism is the instinctive creed of these vigorous, irreflective natures. Rosalind, by mere intuition, knows much more of the foibles and eccentricities of humanity. He is a true and hearty lover, but he has nothing of the passion of a Romeo. Though he writes extravagant verses in the forest, and carves his mistress's name on every tree, he has the full use of his faculties, and can hold his own in repartee with anyone, and shows a fund of common-sense which is greater, in Rosalind's opinion, than befits a lover. (Act III., sc. 2. *Conversations with Jaques and the disguised Rosalind.*)

CELIA.

Celia has an unthankful part to play—to act as foil to Rosalind. For that reason, perhaps, Shakespeare has given her, by way of compensation, the greater endowments of solid worth. Loyalty is the note of her character throughout. She supports her cousin against her father's injustice, and she feels acutely the ungraciousness of his conduct, yet she will not allow him to be censured by others. She might have loved Orlando herself if she had not seen that her cousin was in love. She goes into exile without a repining word or thought, and cheerfully merges her individuality in the more brilliant attraction of Rosalind. Under a pretty pretence of cynicism and wonder at love's infatuation, she gives an unfailing sympathy to the pair of lovers who are almost oblivious of her existence. It is not to be wondered at that a man who had passed through a severe experience of guilt and remorse should be struck by the genuine goodness and loyalty of her nature. In making her and Rosalind what they are, Shakespeare is adhering closely to a truth of life, though it may not be a truth of ethics. The personality which commands general admiration and devotion must be one which has something self-centred and something of the egotist in it. There is a touch of the cynical in the art which gives to the self-forgetful Celia, as the one adherent who feels entirely the fascination of her personality, only the prosaic, satirical fool, Touchstone.

JAQUES.

A dozen inconsistent characters have been read into Jaques, and yet one would think that Shakespeare's intention in him was sufficiently obvious. That our judgment of him should not be too severe is proved by the closing scene, where he pronounces, with truth and sympathy, an appropriate valediction to his co-mates in exile. In spite of all his railing, he has appreciated the "patience and virtue" of the banished Duke. He has not borne Orlando any grudge for the brushes in which he has been severely handled. He has felt a compassion, which one would not have expected in him, for Silvius and his too long-suffering courtship. No doubt the old Duke's verdict is just, and it is his own misconduct that has soured him, but the cause that has prevented him from overcoming the evils that have resulted from the disorders of his youth is not that he is worse, but only more sensitive, than the average man. He is unfitted for active life by an excess of imagination and of the analytic faculty. When he was young, he was carried into further excess than most men, because he was urged on, not merely by the impetus of the senses, but by the added impetus of imagination. Now that the spirits of youth have evaporated, he is moody, melancholy, and introspective. The unthinking optimism of Orlando irritates him, but he is not occupied merely in saying bitter things. He lays himself open to smart rejoinders, and allows himself to be triumphed over, because he is much more engaged in finding food for melancholy thought in the unconscious disclosures of others than in winning a hollow victory at the breaking of bitter jests. He takes a rare pleasure in the caricature of his own moralising by the licensed fool, Touchstone. He is attracted by the grace and innocence of Rosalind in her disguise. "I prithee, pretty youth, let me be better acquainted with thee" (Act IV., sc. 1). His description of life is bitter, not because—as the man of the world would accuse him—he is enamoured of what is ugly, but because he has loved too passionately what is beautiful. In adversity he has been very free in censuring the world to his fellows, but he will not spoil the taste of their prosperity, though his unhappy idiosyncrasy forbids him to share it.

Phebe has been described as the conventional Arcadian coquette. It is true that she has been transplanted from the romance, but it is not likely that Shakespeare would leave the character a mere piece of literary satire. She is conventional and artificial because her position in life makes her conceive of love in that way. She is a girl of the middle class, above the downright rusticity of Audrey, and not living in a large world enough, or an atmosphere unrestricted enough, to have the disdain of convention and the free play of wit of a Rosalind. She wants something above herself. With her womanly quickness and intuition she divines a more striking and heroic manhood than is to be found in her environment. The punishment of her limitation is that she falls in love, not with the heroic Orlando, but with the assumed brilliance of the false Ganymede. When she learns by harsh experience what it is to be scorned, to carry a sore heart, and to persevere in an unrequited affection, she finds in herself a sympathy to which she had been an utter stranger. The foundation of her character is good. She does not make Silvius suffer for Ganymede's petulance. As she suffers in her own love, she draws nearer to her own loyal, but somewhat poor-spirited lover. She has been proud without cause, but she is not vain. She is not up in arms when her beauty is slighted and denied. She will be happy with Silvius, but in a moderate, tranquil measure. Great happiness is for the great.

TOUCHSTONE.

The folly of Touchstone lies in this, that he will not take the shams of the world for what they claim to be. He gives the measure of himself from the very first. When Le Beau invites the princesses to see "much good sport," and then proceeds to recount it, with conventional expressions of pity, telling of "the poor old man, their father, making such pitiful dole over [his sons], that all the beholders take his part with weeping," Touchstone exposes, with a leer, the hollow inconsistency of the courtier. Touchstone suffers from being too acute, and having too much education, for his station. The lower classes, to meet with their own satisfaction and that of their superiors, must accept everything without criticism. Touchstone is criticism personified. Many a poor scholar of the Renaissance must have looked about him with the eyes of this lean and hungry wit. Touchstone is more positive, in the technical sense of the word, more skilful at reducing things to their actual weight, measure, and substance, than Jaques. His criticism is not coloured or distorted by imagination. Sometimes he is capable of devotion, as in following Celia to the forest. Often he is capable of knavery, as in deceiving Audrey, who, however, as he would maintain, deserved to be deceived. Certainly the marriage was unhappy, for what could Audrey do at court? Touchstone, to have attained domestic felicity, should have stayed in Arden, and set up an inn. The rustics would have gaped at his jibes without dissent, attributing the difference between his intellect and theirs merely to court breeding; and Audrey would have made a capable manager.

EXPERIMENTAL CHEMISTRY.

A COURSE OF WORK BASED ON THE JUNIOR LOCAL EXAMINATIONS OF OXFORD AND CAMBRIDGE UNIVERSITIES.

By PROF. J. B. COLEMAN, A.R.C.S., F.I.C.
South-Western Polytechnic, Chelsea.

IV.—The Halogens—Hydrochloric Acid and Chlorides—Ammonia—Nitrous and Nitric Oxides, Nitric Acids and Nitrates.

THE subject is treated in such a manner as to give the *teacher* working details of the experiments suitable for the course. The experiments, unless otherwise stated, are to be performed by the student. If the experiment is starred (*), it should either be performed by the teacher in the lecture room, or done by the student under the *personal* supervision of the teacher.

(30) THE HALOGENS, CHLORINE, BROMINE AND IODINE.

The halogens, or salt producers, consist of the four elements, fluorine, chlorine, bromine and iodine. These elements strongly resemble each other in many ways, but show gradational differences, as will be seen from the subjoined experiments. Fluorine is difficult to prepare, therefore its properties are not described.

To contrast the properties of these elements, prepare a little of each of them from their compounds as described below.

Expt. 45.—**Chlorine** is easily made in the following way:—Powder a little sodium chloride, and mix it with five times as much powdered manganese dioxide. Place a *little* of the mixture in a 4-ounce flask and support the flask on wire gauze placed on a tripod stand. Cover the mixture with sulphuric acid (1 acid, 1 water) and place a watch-glass over the mouth of the flask. Apply a *gentle* heat, when chlorine gas will be given off which will gradually fill the flask. Notice[1] the pale yellowish-green colour of the gas, its suffocating smell, and its bleaching action upon red litmus paper, also that a little thick starch paste introduced on the end of a glass rod is not changed in colour.

Expt. 46.—**Bromine** may be prepared in a similar way, using sodium bromide in place of sodium chloride. Notice the brown vapour given off, its suffocating smell, and its slight bleaching properties. A little thick starch paste introduced on the end of a glass rod is stained yellow.

Expt. 47.—**Iodine** may also be made in a similar way to that described above by substituting potassium iodide for sodium chloride. Notice the beautiful purple vapour, which condenses in blue-black crystals on the upper portion of the flask. Try the effect of introducing red litmus paper and starch paste. The former will be turned brown, the latter almost black.

Expt. 48.—The colour given by the addition of iodine to starch is best seen as follows: Scrape a little of the iodine off the neck of the flask and warm it with a little water. Add this liquid to a little freshly prepared thin starch solution, when the starch solution will develop a beautiful blue colour.

If the above results are tabulated, the gradational difference referred to above will be readily seen.

(31) Preparation and Properties of Chlorine.

Chlorine is most readily prepared by the action of hydrochloric acid upon "bleaching powder." Since this gas is heavier than air and soluble in water, it may be collected by downward displacement.

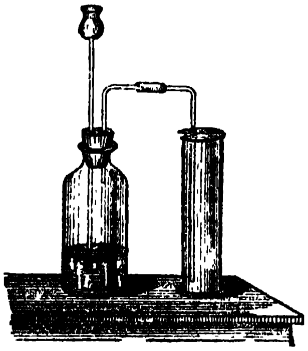

Fig. 21.—Chlorine from bleaching powder.

Expt. 49.—Fit up a two-necked Woulffe's bottle or an ordinary wide-mouthed bottle with a thistle-funnel and a bent delivery tube, as shown in Fig. 21. Cover the bottom of the bottle with good bleaching powder to the depth of about half an inch and place the apparatus in a draught cupboard. Add water through the thistle-funnel until the powder is well wetted, place the delivery tube in a dry jar and cover with a piece of card. Add slowly, at short intervals, small quantities of strong hydrochloric acid, so as to cause a *continuous* evolution of gas. When the jar is full of gas, which can be seen by its green colour, remove the jar, cover with a glass plate, and proceed to collect three more jars.

Expt. 50.—The *bleaching* properties of the gas have already been shown (expt. 45). It may be shown that water is necessary for chlorine-bleaching by the following experiment.

Dry a strip of Turkey-red fabric by warming it over the Bunsen flame for a few seconds, and place it in one of the jars of chlorine. Thoroughly moisten another strip of the fabric with water and hang it in a second jar. In the first case the bleaching will take place *very* slowly, but in the second much more rapidly; hence it may be inferred that if the gas had been perfectly dry no change would have occurred to the *dry* fabric.

Expt. 51.—Immerse a burning taper in a jar of chlorine; the taper will burn with a red flame, giving off clouds of smoke (carbon) and acid fumes (hydrochloric acid gas).

Expt. 52.—Powder a little metallic antimony in a mortar, and allow a little of the powder to drop into a jar of chlorine. The antimony will take fire as it falls through the chlorine, forming antimony chloride.

Expt. 53.—Pass the gas through a little water contained in a test-tube. The water will acquire the smell, colour and bleaching properties of the gas.

(32) Preparation and Properties of Hydrochloric Acid Gas.

Hydrochloric acid is one of the most important compounds of chlorine. It may be prepared by applying a light to a mixture of hydrogen and chlorine, but it is most conveniently prepared by the action of sulphuric acid upon common salt (sodium chloride). Since the gas is soluble in

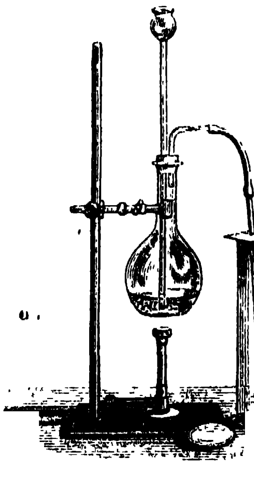

Fig. 22.—Preparation of hydrochloric acid gas.

(*From Tilden's "Manual of Chemistry"—J. & A. Churchill.*)

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[1] The colour of the gas is somewhat masked by the acid fumes given off. It may, however, be readily seen if manganese dioxide and hydrochloric acid are used in place of the chemicals mentioned above.

water and heavier than air, it is collected by downward displacement.

Expt. 54.—Fit up a ten-ounce flask with a thistle funnel and a bent delivery tube, as shown in Fig. 22. Place in the flask several lumps of rock salt (sodium chloride), pour in some sulphuric acid (1 acid, 1 water), when hydrochloric acid gas will be given off on applying a gentle heat. Collect four jars as shown, and cover each jar with a glass plate.

Expt. 55.—Uncover a jar of the gas, notice the white fumes given off which turn blue litmus paper red, showing the acid reaction of this gas.

Expt. 56.—Introduce a burning taper into a jar of this gas, and notice that the taper goes out and that the gas does not burn.

Expt. 57.—Place a jar with its mouth downwards in water. Notice the water rapidly rises as the gas is dissolved, probably leaving a space unfilled with water, due to the air not being wholly displaced by the gas.

The strong solution of this gas in water is the ordinary *liquid* hydrochloric acid of the chemist.

Expt. 58.—Rinse out a cylinder with strong ammonia solution (sp. gr. 0·88) and place it mouth to mouth with a jar of hydrochloric acid gas. Notice the formation of a white substance (ammonium chloride).

Hydrochloric acid is typical of a class of substances called acids, which are sour in taste and turn blue litmus red. When acted upon by certain metals, oxides, hydroxides, &c., they form crystalline solids termed salts. Thus, from hydrochloric acid a number of salts called chlorides may be prepared, all of which are more or less alike. This and other methods of preparing salts are described in the next paragraph.

(33) THE CHLORIDES.

Expt. 59.—Measure out into a small porcelain dish about 5 c.c. of strong hydrochloric acid, add sodium hydroxide (caustic soda) solution until the liquid does not change the colour of either blue or red litmus paper, *i.e.*, is neutral. Evaporate carefully to dryness. (Article III., 24.) A white solid will be left, which on tasting will be found to be common salt (sodium chloride).

Chlorides may also be prepared by the direct combination of the elements as in expt. 52, when antimony chloride was formed. They may also be formed by "double decomposition," as in the formation of silver chloride (expt. 60).

(34) TESTS FOR CHLORIDES.

A chloride may be detected by heating with manganese dioxide and sulphuric acid as described in expt. 45.

Expt. 60.—A solution of a soluble chloride such as sodium chloride gives with silver nitrate solution a white *precipitate* of insoluble silver chloride.

(35) AMMONIA.

Formerly ammonia was prepared by heating horn, hoofs and bones out of contact with air, whence the old name for a solution of ammonia in water, "spirits of hartshorn," was derived. The main source now is a liquid condensed from crude coal-gas, called ammoniacal liquor.

Expt. 61.—Heat a few shavings of horn or bone in a dry test-tube. The pungent smell of ammonia will be perceived, which will turn red litmus paper blue, showing the *alkaline* nature of this gas.

Expt. 62.—Mix a little ammonium chloride (salammoniac) with twice the quantity of slaked lime, and heat in a dry test-tube; a strong smell of ammonia will be perceived.

(36) PREPARATION AND PROPERTIES OF AMMONIA GAS.

Ammonia gas is most conveniently prepared by heating its strong solution in water. Since it is soluble in water and lighter than air, it is collected by upward displacement.

Expt. 63.—Pour a little strong ammonia solution (sp. gr. 0·88) into a 4-ounce flask, and fit into the mouth of the flask a straight piece of glass tube by means of a sound cork. Place the flask on a tripod and gauze and invert over the delivery tube a dry gas jar, as shown in Fig. 23, *gently* heat the liquid, when the gas will ascend and displace the air. The jar is known to be full when a strip of red litmus paper is turned blue if held against the mouth of the jar.

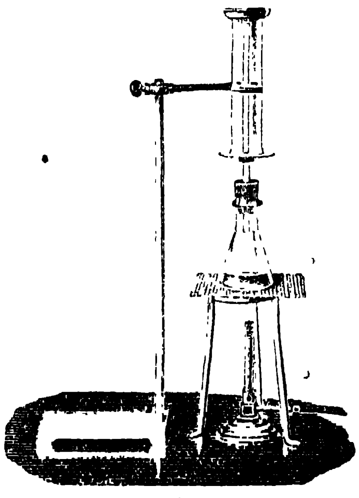

Fig. 23.—Preparation of ammonia gas.

(*From Clowes and Coleman's "Elementary Practical Chemistry"—J. & A. Churchill.*)

Expt. 64.—Place a jar of the gas mouth downwards in a vessel of water, the water will rapidly fill the jar, as this gas is very soluble in water.

Expt. 65.—Pour a little water into a jar of this gas, at once cover the jar with the hand and shake. The liquid will be found to have acquired the smell and alkaline action of ammonia gas.

Expt. 66.—Insert a taper in a jar of this gas, the taper will be extinguished and the gas will not burn. Ammonia gas readily burns in oxygen or *heated* air. Show the latter effect by holding the Bunsen flame under the end of the tube from which the ammonia is escaping. The gas will burn with a yellowish-green flame.

(37) THE OXIDES OF NITROGEN.

Five oxides of nitrogen are known. Two are described below, nitrous and nitric oxides. Nitrogen pentoxide is unimportant, but the compound which it forms with water (nitric acid) is important, and therefore is also described.

(38) NITROUS OXIDE GAS.

Nitrous oxide is readily prepared by heating ammonium nitrate, which splits up into nitrous oxide and steam. The latter is condensed in a suitable vessel, and the gas, which is slightly soluble in water, collects by downward displacement or over water.

Expt. 67.—Cover the bottom of a four-ounce flask with solid ammonium nitrate. Connect this flask with another of larger capacity (Fig. 24, B) by means of a bent tube (C).

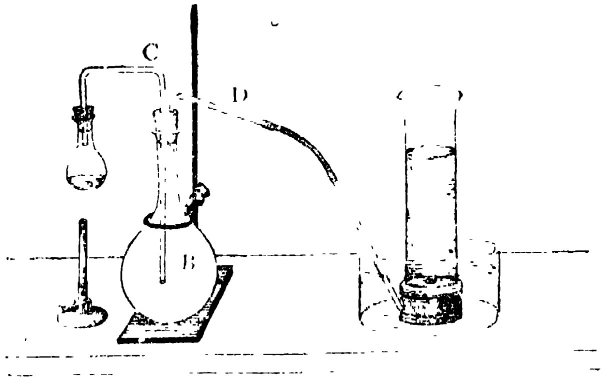

Fig. 24.—Nitrous oxide from ammonium nitrate.

This flask is for the purpose of condensing the water given off during the reaction. It is kept in its place by pressing a retort ring on the upper portion of the body of the flask. Connect a delivery tube (D) with the flask (B) and collect over water as shown.

Heat the small flask with a *small flame* until the ammonium nitrate melts and commences to decompose. If the action becomes at all rapid withdraw the flame, collect four jars and reserve one for expt. 72.

Expt. 68.—Plunge a glowing splint in a jar of the gas and notice it relights, and thus resembles oxygen. (Article II., 12.)

Expt. 69.—Plunge a small candle attached to a deflagrating spoon (Article II., expt. 25) and notice the candle burns very brightly, being surrounded by a halo.

Expt. 70.—Ignite a little sulphur in a deflagrating spoon, and when well alight place it in a jar of the gas. The sulphur continues to burn (contrast expt. 73). In each of the three last experiments the gas is decomposed at a comparatively low temperature, and the substance burns in the oxygen so liberated.

(39) NITRIC OXIDE GAS.

This gas is readily given off when certain metals, notably copper, are treated with nitric acid.

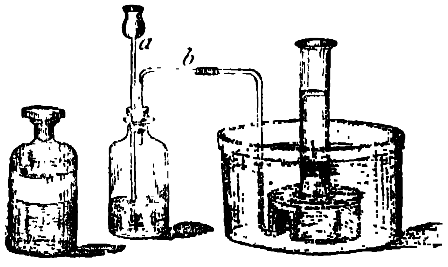

FIG. 25.—Preparation of nitric oxide.

Expt. 71.—The same apparatus is used as that employed for the preparation of hydrogen. Place some copper turnings in the bottle (Fig. 25), and pour in water until the end of the thistle funnel is covered. Now add commercial nitric acid until red fumes are seen. Allow this gas to bubble through the water for a short time, and then collect four jars of the gas.

Expt. 72.—Bubble a little oxygen gas into a jar of this gas, or expose it to the atmosphere. Notice that a brown gas (nitrogen peroxide) is produced which, unlike nitric oxide, is soluble in water.

Expt. 72.—Bubble a little of this gas into the jar of nitrous oxide (expt. 67). No brown gas is seen. Nitrous oxide is distinguished from oxygen by this test.

**Expt.* 73.—Ignite a little sulphur in a deflagrating spoon, and place it in a jar of this gas; the sulphur will go out. Try the experiment with phosphorus. It will continue to burn. Hence nitric oxide requires a higher temperature to decompose it than does nitrous oxide (expt. 70).

(40) NITRIC ACID AND NITRATES.

When potassium or sodium nitrate is mixed with strong sulphuric acid, nitric acid is formed. It is best separated from the other product formed by distillation.

**Expt.* 74.—Arrange the apparatus which was used for the distillation of water (Fig. 18). Introduce about 20 grams of solid potassium nitrate (nitre) into the retort, and then add by means of a funnel about twice the quantity of sulphuric acid. Heat the mixture gently, when nitric acid will distil over, coloured yellow with nitrogen oxides.

The liquid which remains in the retort should be allowed to cool and poured away *before* the retort is rinsed out with water.

Expt. 75.—Add a little of the acid to the metals copper and tin. Notice in both cases a brown gas is given off, but with copper a blue solution is obtained (copper nitrate), whereas with tin a white solid (tin dioxide) is left.

The nitrates usually give off oxygen alone when heated or oxygen mixed with reddish-brown nitrogen peroxide gas.

Expt. 76.—Heat a little lead nitrate in a hard-glass test tube, notice the brown gas given off, also that a glowing splint of wood is relighted, thus showing that oxygen is also produced.

Expt. 77.—Heat a crystal of potassium nitrate on charcoal by means of the blowpipe flame (Article V.). Notice the charcoal burns rapidly or *deflagrates*.

Expt. 78.—**Test for nitrate.**—To a little potassium nitrate solution add *cautiously* a little strong sulphuric acid, and then drop in a few copper turnings. Heat gently, when a reddish brown gas will be given off.

The Making of the Engineer. "From the very earliest years—in fact, from infancy—I advocate the cultivation of the powers of observation, a systematic training of the memory, and an encouragement of the exercise of thought. This is, in reality, the scientific method. Many people advocate the early teaching of science, but I do not. I advocate the collection and naming of plants, the love of animals and knowledge of their habits, the observation and explanation of the daily occurrences in the house, the air and the ground. The fire, a candle, the teapot, cooking, blacking boots, the dewdrop, clouds, rain, wind and storm, the ebb and flow of the tide, the performances of tops and bicycles, familiarly explained, excite a love of nature and of science, and train the mind to observe, to think and to remember."—Sir W. Preece, K.C.B., President of the Institution of Civil Engineers.

NOTES FOR LANTERN LECTURES.

By W. C. F. ANDERSON, M.A.
Firth Professor of Classics, University College, Sheffield.

III.—The Tale of Troy; with special reference to Virgil.—Æneid, I.-II.

THE following are notes of a free lecture given to my own students, to which the pupils of the leading secondary schools were also invited. They had all been reading "Virgil" as the set book for the London Matriculation, and were presumed to know the story of the Fall of Troy as told by him. The aim of the lecture is to supplement class teaching by illustrations best shown as lantern slides. The method is to show pictorially the traditional Epic Cycle as a continuous whole, and to annotate it by references to Virgil. This not only allows one to enumerate the literary sources but shows clearly how much the poet was influenced by works of Art. The slides were made by the college photographer and by myself, and are for the most part from well known German books, especially from the editions of Schreiber's "Atlas of Antiquities" and Engelmann's "Pictorial Atlas to Homer" that I have published. Several slides with summaries are inserted for convenience in taking notes. For one who lectures without notes such slides are a necessity when lists or lengthy descriptions have to be given, and in any case help the audience to overcome the difficulties of unfamiliar names or details.

It does not seem to me that the lecture is likely to be useful to anyone without a fair knowledge of classical archæology, but it may serve as a specimen of what may be done with accessible materials. It is not my intention to place the slides in the hands of a dealer, as this would involve questions of copyright. I have, however, written to the Editors (see April number) to propose a scheme for supplying slides more likely to be generally useful to classical teachers without this drawback. The books referred to in the list of slides are:

(1) Schreiber, "Atlas of Classical Antiquities." Edited by Anderson. (Macmillan.)

(2) Engelmann, "Pictorial Atlas to Homer." Edited by Anderson. (Grevel & Co.)

(3) Baumeister, "Denkmaler des klassischen Alterthums."

(4) Roscher, "Ausfuhrliches Lexicon der Gr. und Rom. Mythologie."

(5) Harrison (Miss J. E.) and MacColl, "Greek Vase Paintings." (Unwin.)

Slides Required.

1. Synopsis of the Epic Cycle. Cf. Jebb, "Homer," p. 152.
2. Description, dimensions and date of the Tabula Iliaca. Schreiber, p. 177.
3. "Tabula Iliaca," showing its actual appearance. Schreiber, pl. XCII. A.
4. "Tabula," as restored by Feodor. Schreiber, pl. XCIII.
5. Greeks and Trojans fighting. Relief, Ghjulbashi, Lycia. Vienna. Schreiber, pl. XXXVII.
6. Æneas and Ajax fighting. Black-figured Corinthian Cylix. Engelmann, pl. XII., 65.
7. The Horses of Rhesus. Red-figured Crater from Ruvo. Baumeister, fig. 782.
8. Hector dragged by Achilles. Black-fig. Attic Amphora, Vatican. Engelmann, pl. XVIII., 104.
9. Hector dragged round Troy. Roman Terra-cotta Relief.
10. Priam visits Achilles. Red-fig. Attic Amphora, Vienna. Engelmann, pl. XX., 108.
11. The ransoming of Hector. Red-fig. Amphora from Apulia. Baumeister, fig. 792.
12. Priam before Achilles. Fragment of a Tabula Il., Paris, Daremberg et Saglio, fig. 3950.
13. Priam ransoming Hector. Relief on Roman Sarcophagus. Engelmann, pl. XIX., 109.
14. Achilles slays Penthesilea. Black-fig. Amphora by Exekias. Brit. Mus. Baumeister, fig. 2123.
15. Amazon Mattei, Vatican. Cf. Gardner, Greek Sculpture, fig. 78.
16. Achilles lying in wait for Troilus. Black-fig. Hydria, Brit. Mus. Catalogue, fig. 36.
17. Achilles pursuing Troilus. Black-fig. Attic Amphora by Klitias and Ergotimos, generally known as the "François Vase." From Chiusi (Clusium), Florence.
18. Achilles drags Troilus to the Altar. Red-fig. Cylix by Euphronios, Perugia. Harrison, Gr. Vase Ps.
19. Achilles slays Troilus. Painting inside above cylix. Harrison, Gr. Vase Paintings.
20. The Theft of the Palladium. Pompeian Wall-painting.
21. The Sack of Troy. Synopsis of Scenes. Cf. Baumeister *sub voce*.
22. Iliupersis and Flight of Æneas. Central scenes from the Tabula Iliaca.
23. Laocoon and his Sons. Pompeian Wall-painting. Roscher, Lexicon, p. 1839.
24. Laocoon. Group by Athenodorus and Polydorus. Vatican. Photo.
25. The Wooden Horse. Corinthian Aryballus, Paris. Jahrbuch d. Inst. VII., pl. II.
26. The Greeks descend from the Horse. Gem, Baumeister, fig. 794.
27. The Horse brought into Troy. Pompeian Wall-painting. Engelmann, pl. V., 33.
28. Iliupersis. Red-fig. Cylix by Brygos, Louvre, Paris. Heydemann, Iliupersis.
29. Iliupersis. Scenes on the Vivenzio Vase. Baumeister, fig. 795.
30. Vivenzio Vase. Red-fig. Calpis in Naples Museum. From Photo.
31. The death of Priam. Scene from the Vivenzio Vase.
32. Ajax and Cassandra. South Italian Amphora. Naples Museum. From Photo.
33. Ajax and Cassandra. Scene from the Vivenzio Vase.
34. The Flight of Æneas. Black-fig. Attic Amphora.
35. The Flight of Æneas. Black-fig. Amphora.
36. Æneas bearing Anchises. Terra-cotta Relief. Turin. Roscher, p. 163.

Lecture Notes.

(1) VIRGIL'S TALE OF TROY owes but little to the "Iliad" and "Odyssey." The inspiration and style of treatment are due to Homer, but direct translation or adaptation of his narrative is studiously avoided. The bulk of the story is borrowed from the wider EPIC CYCLE. A list of the works that form the Trojan part of the Cycle shows that they form a complete whole in which the "Iliad" and "Odyssey" have their place as narrating episodes in that amazing fabric of traditional history. The slide gives the list with the names of the authors and their approximate dates.

(2-4) THE FAMOUS TABULA ILIACA OF THE CAPITOLINE MUSEUM, ROME, clearly shows the way in which the Tale of Troy was taught to schoolboys in the first century, A.D. Fragments of similar tabulæ (cf. No. 12) prove that such summaries were in common use. The compiler of the Capitoline Tabula is careful to give the sources; the "Iliad" of Homer, the "Æthiopis" of Arctinus, the "Little Iliad" of Lesches and the "Iliupersis" of Stesichorus. He adds an inscription, dedicating the work to boys as a guide to wisdom. The story is told by a long series of scenes carved in low relief on the soft stone. References to the books of the "Iliad" and the names of the actors and of prominent objects in each scene are inscribed under the pictures. Archæologists have shown that these little pictures are not the invention of the sculptor but are sketches of larger works in which the different scenes were represented in a conventional manner. Each had a scheme of treatment fixed by a long artistic tradition which in many cases was quite independent of Literature. A close parallel is to be found in mediæval pictures of Bible scenes which often show details taken from long-forgotten legends. The artist follows his own tradition regardless of the literature of his time. That the Epic story was known to Virgil pictorially needs little proof. His description of the paintings at Carthage and the close likeness of many of his details to extant works of art would almost be sufficient. Lessing's "Laocoon" owes its inspiration to but one of these coincidences. Scores of others can be found in archæological works.

(5) This is given as an example of the treatment of Epic themes in GREEK SCULPTURE of the best period. It is Lycian work of the fourth century B.C., and yet recalls the "Iliacas ex ordine pugnas" that Æneas saw at Carthage. The fighting at the walls of Troy, the attack on the ships and the fugitives from the city are recognisable, but the picture is not as much split up into conventional scenes as in later sculptures or on earlier vase-paintings.

(6) The old Corinthian alphabet in which the names of the heroes are written shows that the vase is at least early sixth-century work, if not older. Epic scenes occur on VASES from the seventh century downwards, and were also represented in contemporary metal work and in sculpture. The François Vase (cf. No. 17) and the Chest of Cypselus described by Pausanias are good examples of the manner in which such scenes were selected from the vast body of Epic legends, without any special preference for those of the "Iliad" and "Odyssey." In fact, the artists treat their subjects so freely that it is reasonable to assume they took their story from popular tradition rather than from literature. In many cases, notably in pictures of heroes fighting, they seem to have painted the figures first and afterwards supplied suitable names which might or might not correspond to those of Homeric combatants. Virgil cannot be supposed to have known these archaic works of Art and, even if he had seen the Chest of Cypselus, or some other monument of an early date, would not have derived inspiration from it. The pictures that represented the Homeric Age in his time were no doubt lineal descendants of these primitive efforts, but they had been transformed by the genius of Greek Art.

(8) The contrast between ARCHAIC and LATE VASE-PAINTING is well illustrated by a comparison of this picture with the last. The figures are no longer in silouette nor on one plane, but stand out clearly against a landscape background with the aid of perspective and fore-shortening. As far as the potter is able, the effect of frescoes such as those of Polygnotus is suggested. Virgil's description of the white tents, the slain Thracians and Diomede leading back the horses was based on a fresco like this. The vase belongs to a period when Greek art was entering the phase in which the Romans first learned to know it.

(9-10) The Attic vase-painting (6th century B.C.) and the Roman terra cotta show the same contrast. The relief recalls Virgil's "ter circum Iliacos raptaverat Hectora muros," and the figure of Andromache suggests a feeling of tragic pathos in harmony with his vision of the mangled corpse. The potter, on the other hand, emphasises the vengeance of Achilles in laying the scene at the barrow of Patroclus, and showing the shade of the dead hero in the air above. Nor does he trouble to follow Homer closely, for he introduces Iris and makes Ulysseus one of the spectators. The Tabula shows the death of Hector at the gate of Troy, his death and the dragging of his corpse in agreement with Homer.

(11-13) Here once more the potter gives expression to vengeance, not pathos. Achilles feasts while the body of Hector lies beneath his couch. Priam displays no emotion, but stands erect as befits a king. The Apulian vase shows him in the humiliation of dust and ashes, and the Roman relief has him on his knees kissing the hand of the reluctant victor. The Tabula spares him this last indignity, and places him seated at the feet of Achilles. The change in sentiment is possibly in part due to the influence of Greek tragedy, and is in any case instructive as explaining the dominant note of melancholy in the Æneid.

(14-15) Virgil's conception of the Amazon queen with bare breast and crescent shield is that embodied in a series of statues belonging to the best period of GREEK SCULPTURE. Her death at the hands of Achilles is not referred to.

(16-19) TROILUS is in Homer one of Priam's bravest sons, a warrior who had his joy in horses. In Virgil he is the luckless youth who was no match for Achilles. The potters have a version differing from both. The story is a favourite one with them, and may be reconstructed by the aid of several vases. Troilus and Polyxena went to a fountain outside the walls, she to draw water, he to give his horses drink; Achilles lay in ambush at the spring, pursued them, captured Troilus and dragged him to the altar of Apollo, where he slew the poor boy. Servius in his commentary on the Æneid refers to a version of the story which is much the same as this, but the literary source is unknown. It should be noted that in No. 16 Troilus is bearded.

(20) The theft of the Palladium mentioned in Sinon's speech is one of the scenes on the Tabula from the LITTLE ILIAD. It was the subject of one of the paintings in the Propylæa at Athens, and is also found on vases. The fresco from Pompeii gives the names of all the persons present—Diomede, Ulysses, Helen, Æthra, a servant, and, apparently, Cassandra. Virgil only mentions the first two.

(21-22) The Tabula gives the ILIUPERSIS OF STESICHORUS as its central tableau. He seems to have given it the final form in which it was known to the Romans. It was a favourite subject with Greek artists, and almost every detail in it can be illustrated by vase-paintings. Virgil omits some of these—notably, the sacrifice of Polyxena and the recognition of Æthra by her grandsons. One scene he has altered, the meeting of Helen and Menelaus, putting Æneas in the place of the outraged husband.

(23) The death of LAOCOON does not appear on the Tabula as one of the scenes from the "Little Iliad," though the Wooden Horse and Sinon are clearly shown. ARCTINUS, however, mentioned it, and there can be no doubt that it was, from an early period, part of the story of the horse, though it does not appear in Art until a late date. Sophocles wrote a tragedy with the title, Laocoon, but we do not know how he treated it, merely that he gave names to the snakes. The episode, properly speaking, does not belong to the Iliupersis, but is incorporated in it by Virgil as an omen of coming ruin, and as part of the tale of the horse which is shown by the Tabula to come from the "Little Iliad." The Pompeian painting agrees with Virgil in showing that the serpents attacked the sons first. That it was inspired by him is, however, doubtful.

(24) The famous GROUP IN THE VATICAN is probably at least a century older than Virgil's poem, though it was, when first discovered, taken to be an illustration of his lines. One notable point is that the elder son is comparatively unhurt and not dead. We are told that in Arctinus he escaped, so that the

sculptor seems to follow the older version. Lessing's celebrated comparison of the methods by which the sculptor and poet respectively arouse the feelings of tragedy gives the group much of its fame, but modern critics regard it rather as a product of the false sentiment of Greek Art at the decline than as one of the great masterpieces of all time.

(25-27) The story of the Wooden Horse is taken from the Little Iliad, and the POMPEIAN PAINTING is not unlike the scenes given on the Tabula. It also agrees well with Virgil, but adds to his picture the Figure of Helen, who stands on the citadel and signals to the Greeks the success of their stratagem. This is referred to by Virgil himself in Book VI. The Corinthian vase shows the earliest attempt to depict the horse, which we learn from Pausanias was also a common subject with sculptors.

(28-30) These two vases are typical examples of a series, and show that at the beginning of the 5th century B.C. the story had taken a definite form. As in the Tabula, the recognition of Æthra supplements Virgil, and the dramatic incident of Andromache rushing with a huge pestle to defend Astyanax is added. The potter of the Vivenzio vase shows us Astyanax lying dead on Priam's knee, though Virgil says nothing of his death. The other incidents the death of Polites and of Coroebus, Ajax tearing Cassandra from the statue of Minerva and the flight of Æneas—are all given.

(31) A common subject on vase-painting, and often represented alone.

(32-33) This also is a favourite subject for single pictures. Virgil does not mention Ajax by name as the captor of Cassandra, though he makes Juno refer to his punishment by Minerva, a good instance of his anxiety not to repeat the details of his story. It is worth noting how artistically he contrives to avoid the appearance of slavish reproduction, and yet to utilise his source to the utmost, as, for instance, in the case of Helen's signal (cf. No. 27).

(34-36) The Tabula gives a very full summary of the FLIGHT OF ÆNEAS, showing how closely Virgil followed Stesichorus. The early Attic vases are a proof that the carrying of Anchises was familiar to the popular imagination even in the early 5th century B.C. One of them repeats the figures of Creusa and Ascanius, probably merely for the sake of symmetry, and the other omits Ascanius altogether.

Points to be Emphasised.

(1) That the Tale of Troy, as told by Virgil, is derived from the Epic Cycle, and only in a few details from Homer.

(2) That the legends in the Cycle were popularly known and spread by Art (from 600 B.C.) as well as Literature, and that the artistic tradition was in the main independent of the literary.

(3) That pictures and sculptures gave the outward form in which the Epic scenes and heroes appeared to the poet's imagination. The part played by Tragedy in representing legend in clearly-defined scenes and in concrete form should not be forgotten. The stage borrowed from both Literature and Art, and, in its turn, inspired both.

(4) That Virgil gave a new setting to a familiar story, altering the sequence of the narrative and telling much of it by skilful allusion, but introducing little of his own invention. Milton's "Paradise Lost," based on legends of the Apocrypha even more than on the Bible, may be quoted as a parallel. The influence of the Miracle plays in keeping legends alive and in giving reality to the scenes of ecclesiastical Art illustrates the way in which the stage kept Epic legends alive.

(5) That Virgil is most conscientious in the use of his material, and often omits an incident to introduce it elsewhere. His fidelity to authority is also to be seen in the pictorial setting of various episodes, in which he may be assumed to be following familiar paintings or sculptures. This aspect of his work has always appealed to artists, who have found him a never-failing source of inspiration. It, moreover, explains his popularity in the dark ages, when literature, as such, was all but dead.

(6) That the Æneid is essentially a learned work, summing up the literature, traditions, legends and popular Art of a thousand years, and that it owes its immortality to the inspiration that made these dry bones live and move in an enchanted world before the eyes of all who have imagination enough to behold the poet's vision.

TEACHERS' NOTES ON ENGLISH HISTORY, 1603-1715.

By C. S. FEARENSIDE, M.A.(Oxon.), and L. J. MCNAIR, B.A.(Cantab.)

VI.—THE PROTESTANT SUCCESSION, 1689-1715.

THROUGHOUT this period England and the sister kingdoms were halting between two kinds of "foreign" control: the maintenance of a Protestant succession involved (except in the reign of Queen Anne) the rule of a "foreign" prince (Oranger or Brunswicker); the restoration of the native Stuart was dreaded because it might mean the restoration of the "foreign" control of the Papacy.

I. Distinctive Features of the Period.

(i.) BEGINNINGS OF THE *second* "HUNDRED YEARS' WAR" between England and France.

(ii.) BEGINNINGS OF PARTY GOVERNMENT (still quite unsystematic and disliked as an innovation): due to three recent constitutional developments:—

(1) The *legal* necessity for the Crown to summon Parliament frequently: esp. *Triennial Acts* of **1664** and **1694.**

(2) The *practical* necessity for the Crown to humour the unavoidable Parliament: esp. after the **financial** and **military regulations** of **1689.**

(3) The existence of definite political parties. Cf. Sunderland's advice to William III.

(iii.) BEGINNINGS OF THE NATIONAL DEBT: see Macaulay. Note also other points of **Finance**—Bank of England, Currency Reform, Audit.

(iv.) BEGINNINGS OF GREAT BRITAIN as a working unity. Why and how was the Anglo-Scottish *personal union* replaced by a *parliamentary union* in **1707**? **(N. B. Darien Scheme.)** Contrast the attempts of Edward I., James I. and Oliver Cromwell. Why was the contemporary request for Anglo-Irish union refused?

(v.) INCREASED LIBERTY OF THE SUBJECT: *Toleration Act*, **1689**; Lapse of *Licensing Act*, **1695**. On the other side note *English Anti-Romanist Act*, **1701**; *Occasional Conformity Act*, **1711**; *Schism Act*, **1714**, and Irish **Penal Code.**

II. Divisions of the Period.

(i.) EXTENSION OF THE REVOLUTION TO THE SISTER KINGDOMS, **1689-1691.** Why and to what extent did Scotland favour and Ireland resist the change of kings? Exceptions, Incidents in the Struggle, and Results.

(ii.) DEFENCE OF THE PROTESTANT SUCCESSION, **1689-1697**. Theatres of war: Scotland; Ireland; the sea; Flanders. N.B. Battles of **Beachy Head** and **La Hogue**; Terms of the *TREATY OF RYSWICK*, **1697.**

(iii.) DOMESTIC ATTACKS ON WILLIAM III., **1697-1701.**

(1) *Caused* by William's preference for a "Dutch" foreign policy and "Dutch" favourites.

(2) *Illustrated* in the *ACT OF SETTLEMENT*, **1701.**

(3) *Ended* by Louis XIV.'s recognition of James Edward Stuart as "James III." on his father's death in 1701.

(iv.) WAR OF THE SPANISH SUCCESSION, **1701-1713.** *Notabilia* (besides partition treaties, theatres of war and influence of home politics, esp. **Sacheverell**) :—

(1) What were the main points at issue?

(2) Why did England first oppose and then accept the Bourbon claims?

(3) What part did England take in the war?

(4) What did England gain from (*a*) France, (*b*) Spain, by the *PEACE OF UTRECHT*, **1713.**

N.B.—This "*Peace* of Utrecht" includes many separate *Treaties*, none of which arranged terms between the **Hapsburg** and the **Bourbon** claimants for the Spanish dominions. The war, as a whole, can only be very partially understood if treated solely from the British point of view; and it cannot be understood at all without reference to an historical atlas.

(v.) SUCCESSION INTRIGUES, **1713-1715.** On the whole the Whigs blundered less than the Tories: hence the succession of George of Brunswick-Hanover and the failure of the **Fifteen.**

III. Miscellaneous Points.

(i.) BIOGRAPHIES: **Bolingbroke** (St. John), **Godolphin,** Halifax (Montague), Leeds (Danby), **Marlborough**, Orford (Russell), Oxford (Harley), Peterborough, Sancroft, Sarsfield, [Shrewsbury], Sunderland.

(ii.) MAP WORK: The **Jacobite** campaigns in Ireland, Scotland and North of England; Marlborough's campaigns; the American colonies in 1715; the forts and factories of the East India Company in 1715.

(iii.) TEXTS (for talks or problem work):

(1) "I have no mind to be my wife's gentleman usher." [William III. on his position in England.]

(2) "It would be well to extirpate that set of thieves." [William III. on the MacDonalds of Glencoe.]

(3) "We could never be of that mind that violence was suited to the advance of true religion." [William III.]

(4) "The gentlemen of England trusted King James . . . . and they will not trust me." [William III. on the niggardliness of Parliament.]

(5) "I will fight them, even though King James were on board." [Admiral Russell, of the French.]

(6) "If I must wage war, I had rather wage it against my enemies than against my children." [Louis XIV. on the terms offered by the Allies in 1709.]

(7) "The High Allies have been the ruin of us." [Swift on the War and National Debt.]

(8) "Nobody can know one day what a House of Commons will do the next."

(iv.) BOOKS: Macaulay's *Essays* and *History* (esp. ch. iii.) abound in passages which at once interest and enlighten the young; but for generalisations Seeley's *Expansion* and *British Policy* will be found more trustworthy. Brief biographical sketches: Traill's *William III.*; Morley's *Walpole*; Collins's *Bolingbroke*; Stebbing's *Peterborough*; Russell's *Dampier*; and Butler's *Marlborough*. Advice in selecting from the stories, tracts and pamphlets of Addison, Locke, Defoe, Swift and Arbuthnot (the creator of *John Bull*) can be found in any good text-book of literature. A lively summary of the ecclesiastical politics of the period 1660-1715 is contained in the old song "The Vicar of Bray." This period witnessed the rise into popularity of the National Anthem, "God Save the Queen."

HIGHER EDUCATION BILL FOR SCOTLAND.

THE introduction of Lord Balfour's Bill marks an important epoch in the history of Scottish education. By this measure Lord Balfour has put a fitting copestone to his great work in the field of education. In its main features the measure follows closely the general trend of opinion in Scotland as brought out by the recent report of the Higher Education Commission of the Educational Institute. The chief object of Lord Balfour's statesmanlike measure is to consolidate the various monies now available for secondary education into one fund to be called the Higher Education (Scotland) Fund, and to provide representative bodies to act as local authorities to be known as Higher Education Committees. The administration of this central fund will be entirely in the hands of the Department, and the first charges upon it will be (1) to defray the cost of the inspection of higher-class schools, and of the leaving certificate examinations, and (2) to pay a grant of £3 per pupil to schools not receiving Code grants.

The proposal of the Bill to give a capitation grant of £3 to higher-class schools is one that no government could have ventured upon twenty years ago, and, if passed into law, will do more than any measure yet contemplated to put the higher education of the country on a satisfactory basis. The unit of administration adopted is the county or county burgh. The precise constitution of the committees is not laid down in the Bill, but it is intended that at least half the representation will come from the town and county councils; the other half will be drawn from the leading school boards, and from persons chosen by the Department on the ground of their interest in education. These authorities are not directly to govern the schools, but they will have considerable powers of suggestion, supervision and control, which their power over the finance will enable them to exercise effectively. Their duty generally will be to see that the various educational agencies within their district do not overlap, and that in all parts of their area suitable facilities for higher education will be given, whether by higher schools, higher departments, or by bursaries. The excess of expenditure over income in the various schools will be met to the extent of one-half from the Central Fund, one-fourth from the school authorities, and one fourth from the Higher Education Committee, which is granted rating powers for this purpose. Other important points in the Bill deal with the tenure of teachers and the age of exemption from school, which is raised to 14, though provision is made for exemption at 12, on condition of attendance at an evening school. In regard to tenure of office, Lord Balfour makes the Department a court of appeal to the extent of granting a special certificate to teachers who may be dismissed though doing satisfactory work. *C'est le premier pas qui coûte.* The Department have taken it, and it may safely be assumed that they will be compelled to go a good deal farther. Yet this is certainly a step in advance, and teachers may be trusted to prevail upon the Department to take the few further steps that would place the whole question on a satisfactory basis.

The main features of the Bill are heartily approved by all interested in education. Yet reforms so far-reaching, and touching so many local interests, could not fail to rouse the petty jealousies of some of the public bodies affected. School Boards, for instance, dislike the new Education Committees which are to come between them and the Department, and it will take some skilful piloting to find a common course of harmonious action between the bodies. The present Education Committees consider that too much power is centred in the Department, and that the new local authorities are reduced to the position of mere figure-heads for registering the decrees and wishes of the Department. Teachers accept the Bill heartily and thankfully as a great act of constructive statesmanship. The opinion amongst them, however, is unanimous on the necessity of pressing for a Consultative Committee on the lines of the Welsh Advisory Board. The country has learned by bitter experience that Government departments have a tendency to paralyse initiative and free development by an excess of red tapeism. A Consultative Committee would effectively check such tendency, and would bring the Department into closer and more living touch with Scottish feeling. The chief provisions of the measure are concisely stated in the following abstract. Two features of the Bill to which particular attention is drawn, as they mark an altogether new departure, are:—

(1) The capitation grant of £3 to all approved higher-class schools.

(2) The levying of a local rate for purposes of higher education.

In view of the Secondary Education Bill for England, these points are worthy of careful consideration.

Summary of the Education (Scotland) Bill.

Constitution of Central Fund.—For the purpose of the Act, a fund, called the Higher Education (Scotland) Fund, is constituted, into which is paid all monies at present devoted to higher education.

Application of Fund.—This fund will be administered by the Department according to the following provisions:—

(1) The defrayal of the cost of inspection of higher-class schools, and of the Leaving Certificate examinations.

(2) The payment of a capitation grant (averaging £3 per pupil) to higher schools not receiving Code grants.

(3) The contribution of certain sums towards the provision and maintenance of central institutions such as schools of art, technical colleges and agricultural colleges.

(4) The payment to the Higher Education Committees of a proportion not exceeding one-half—

(*a*) Of the deficiency arising from the excess of expenditure over income in the schools within their area;

(*b*) Of the sums necessary to provide a suitable number of bursaries and scholarships;

(*c*) Of any further necessary expenditure incurred by the committee.

Appointment of Local Authorities.—The unit of management is the county or county borough.

In each such district a local authority for higher education is set up, to be called the Higher Education Committee. The precise constitution of these committees is not laid down, but the general principle is as follows:—

Half the representatives from the county councils and town councils; the other half, representatives from the school boards with higher schools and from persons nominated by the Department for their interest in education.

Powers of Higher Education Committees.—The following powers are conferred on these committees:

(*a*) They shall determine what school should be admitted to the benefits of the Act.

(*b*) They shall approve or disapprove of the expenditure incurred by school boards or other managers on all schools under the provisions of this Act, and shall determine, after consultation with the managers, the scale of fees to be charged in different schools.

(*c*) They shall have power to call upon school boards within their area to make suitable provision for higher education. In the event of the school board failing to do so, their grants may be withheld or reduced.

(*d*) They shall, within certain limits, determine the curriculum of schools giving higher education.

(*e*) They shall have power to appoint visiting masters to give instruction in special subjects, but subject to the approval of the school managers.

(*f*) They shall prepare a scheme for the provision of bursaries or scholarships, but such scheme will only be valid when approved by the Department.

(*g*) A local committee shall have power to contribute towards the provision, equipment, and maintenance of central institutions, such as technical schools, schools of art, and such like.

In regard to the latter, the Department shall determine, after enquiry, what districts are mainly served by such institutions, and shall call upon the Higher Education Committees of such districts to contribute in some definite proportion to their maintenance and support.

In so far as the excess of expenditure over income is not met by the contributions from the Central Fund already referred to, it shall be met to the extent of one-fourth by the school authorities, and one-fourth by the Higher Education Committee. Any further sums which are required in the exercise of the powers conferred in the Act, in so far as they are not met by a contribution from the Higher Education Fund, shall be provided by means of a local rate levied within the district of the Committee.

NATURE-STUDY IN SCHOOLS.

PRACTICALLY the first official act of the Board of Education was the distribution of a circular containing advice as to the intention of "object-lessons," and suggestions as to the points to be borne in mind by teachers giving such lessons in schools in rural districts. The chief point insisted upon by the circular is that lessons on natural objects and phenomena should always be conducted upon what has been called "heuristic" principles; that is to say, they should aim at developing the pupils' faculties of observation and reasoning rather than to convey a large amount of detailed information. It is satisfactory to be thus given evidence that the Board intends to encourage the rational teaching of science, but the principles laid down in the circular are precisely the same as those stated in previous documents referring to the kind of instruction which should be given as object-lessons. Teachers have been reminded before that object-lessons should be observation lessons. The prime use of such instruction is that it teaches children to observe, compare, and contrast; the second use is to impart information, and the third is to reinforce the other two by making the results of them the basis for instruction in correct expression, drawing, number, modelling, and other handiwork.

It is obvious that object-lessons may be made a valuable means of training the mental activity and intelligence of children, but an essential condition of their success is that the teachers should be sufficiently familiar with outdoor nature to be sympathetic exponents of her characteristics and moods. When such personal acquaintance with natural history is absent, the lessons are little more than a *réchauffé* of text-book information, or the expression of a number of more or less uninteresting facts. Far too much information is usually given, and too much attention is devoted to details which cannot be correctly comprehended by the pupils. It is of no real advantage, educationally or otherwise, for a pupil to have a confused idea that a cow has a stomach with four divisions, or to be told that a cat has five claws on each forefoot, and four on each hind foot, yet this is the kind of information usually given in object-lessons, in spite of all that has been done to discourage it. Hence, in reading the subjoined extracts from the Board of Education's circular, it should be borne in mind that, though its requirements are reasonable, its principles sound, and its suggestions inspiring, the realisation cannot always come up to the standard set forth therein.

When every teacher possesses the divine afflatus of Nature, children will be introduced to natural things by the pleasant process here indicated. Meanwhile, we are glad to know that the Board is desirous of giving time and opportunity for out-door study in rural districts. How such a system can be worked into the curriculum of a secondary school is a problem which few masters have been able to satisfactorily solve.

> Teachers should lose no opportunity of giving their scholars an intelligent knowledge of the surroundings of ordinary rural life and of showing them how to observe the processes of nature for themselves. One of the main objects of the teacher should be to develop in every boy and girl that habit of inquiry and research so natural to children; they should be encouraged to ask their own questions about the simple phenomena of nature which they see around them, and themselves to search for flowers, plants, insects and other objects to illustrate the lessons which they have learnt with their teacher.
>
> It is, moreover, highly desirable that the natural activity of children should be turned to useful account—that their eyes, for example, should be trained to recognise plants and insects that are useful or injurious (as the case may be) to the agriculturist, that their hands should be trained to some of the practical dexterities of rural life, and not merely to the use of pen and pencil, and that they should be taught, when circumstances permit, how to handle the simpler tools that are used in the garden or on the farm, before their school life is over.
>
> Object-lessons must not be, as is too often the case, mere repetitions of descriptions from text-books, nor a mechanical interchange of set questions and answers between teacher and class. To be of any real use in stimulating the intelligence, the object-lessons should be the practising ground for observation and inference, and they should be constantly illustrated by simple experiments and practical work *in which the children can take part*, and which they can repeat for themselves at home with their own hands. Specimens of such courses can be obtained on application to the Board of Education. These lessons are enhanced in value if they are connected with other subjects of study. The object-lesson, for example, and the drawing lesson, may often be associated together, and the children should be taught to draw actual objects of graduated difficulty, and not merely to work from copies. In this way they will gain a much more real knowledge of common implements, fruits, leaves, and insects than if these had been merely described by the teacher or read about in a lesson-book. Composition exercises may also be given—after the practical experiments and observations have been made—for the purpose of training the children to express in words both what they have seen and the inferences which they draw from what they have seen; and the children should be frequently required and helped to describe in their exercise books sights of familiar occurrence in the woods and in the fields.
>
> Considerable importance is attached to work being done by the elder scholars outside the school walls, whether such work takes the form of elementary mensuration, of making sketch-plans of the playground and the district surrounding the school, of drawing common objects, of paying visits of observation to woods, lanes, ponds, farms, and other suitable places, under the guidance of the teacher, or of the cultivation of a school garden.
>
> The teacher should, as occasion offers, take the children out of doors for school walks at the various seasons of the year, and give simple lessons on the spot about animals in the fields and farmyards, about ploughing and sowing, about fruit trees and forest trees, about birds, insects, and flowers, and other objects of interest. The lessons thus learnt out of doors can be afterwards carried forward in the school-room by reading, composition, pictures, and drawing. In this way, and in various other ways that teachers will discover for themselves, children who are brought up in village schools will learn to understand what they see about them, and to take an intelligent interest in the various processes of nature.

THE NATIONAL UNION OF TEACHERS.

FOR the second time the National Union of Teachers has held its annual conference at York. It is twenty-five years ago since the first visit was paid, and during this interval the union has grown from a membership of 7,941 to the splendid total of 42,000. Delegates to the number of nearly 3,000 were welcomed by the Lord Mayor of York, the other city authorities, and many representatives of public bodies.

The president-elect, Mr. Marshall Jackman, of the Michael Faraday Board School, Walworth, delivered the presidential address on the opening day, April 16th. His speech was a plea for reasonable security of tenure for the teacher, and was throughout a temperate and statesman-like presentation of an exceedingly difficult question. Speaking of the present position of elementary teachers, Mr. Jackman said they are compelled to contribute to a scheme for old-age allowances, while no precautions are taken to protect them from being unjustly deprived of the benefits their contributions and service have paid for. The Government will be shamefully neglectful of its duty if steps are not immediately taken to protect teachers against unjustifiable dismissal. The superannuation scheme is but a lottery of the worst description. In almost every country, where there is any pretence to a national system of education, there is to be found some means of appeal against capricious dismissal. Having given a number of typical instances of unjustifiable dismissal, Mr. Jackman said, teachers claim to be more secure in their tenure of office because they are public servants; their work is of such a character that they can obtain no vested interest in it. To retain his post a teacher must keep a still tongue. In the interest of education should this be allowed? If not, then teachers must be placed in the position of men and women who can speak out when necessity and the interests of the children demand it. Teachers do not ask for the kind of tenure which beneficed clergymen enjoy. Such a system would be detrimental to the interests of the children. What teachers claim is that, as public servants working in public schools, paid for wholly, or in very great part, out of public funds, and pensioned from the public purse, their tenure of office may depend upon the proper fulfilment of their school duties, and not be terminated for matters entirely extraneous to their school work. As to how reasonable security of tenure can be secured, Mr. Jackman suggested that a clause be added to the form of agreement which Sir John Gorst has placed on the Code, to the effect that no teacher shall be dismissed without a reasonable assigned cause.

The remaining part of the week was filled with meetings for the discussion of current topics of educational importance. Resolutions were adopted expressing the opinions that (*a*) the Central Authority for Education should consist of the Board of Education, together with the Consultative Committee, as provided by pars. 1 and 4 (i) of the Board of Education Act, 1899; (*b*) the County Educational Authority should be a County School Board, elected on the parochial register for the same areas as for the County Council; (*c*) in the administrative County of London, the County Educational Authority, as defined in par. *b*, shall be the School Board for London.

A hearty welcome was given to the Elementary Education Bill, 1900, and to the important reform instituted in the Day Schools Code for 1900, and to the official recognition of higher elementary education given by the Minute of the Board of Education, dated April 6th, 1900. The conference, however, recorded its opinion that due provision should be made for similar education by means of suitable grants to higher classes in public elementary schools, where such classes are established with the consent of the Board of Education.

ITEMS OF INTEREST.

GENERAL.

WITH a view to encourage interest in English composition, we have arranged to award several prizes for essays written by junior and by senior pupils. Particulars of the competition will be found on p. 199. Several subjects are set in each class, in order to give every pupil an opportunity of competing for the prizes. Attention is invited to the fact that the teacher of the form of each winner of a first prize will receive books for distribution as additional prizes for essay writing.

"I AM amused," writes a correspondent, "to notice that the gentleman who propounds the 'Test Papers' in THE SCHOOL WORLD apparently differs from the authors who furnish 'Teachers' Notes on English History' as to what is essential - judging from some of the questions asked." If our correspondent will think for a moment, he will perceive that the compilers of the Notes and the propounders of the Test Papers have not quite the same object in view. These particular "Test Papers" are primarily designed for preliminary candidates; for such it is generally agreed that topics appealing to the memory and imagination are especially suitable, and therefore the questions deal largely with picturesque stories and detached incidents. The "Teachers' Notes," on the other hand, are mainly intended for the teacher preparing classes for any grade in the Locals; they therefore pay more attention to the grouping and connexion of events than to the events themselves. Though they treat one of the Oxford Local Periods, the compilers have concerned themselves rather with English history than with the peculiarities of examiners. That at least is what we gather from the somewhat cryptic utterance of one of the compilers—"Perhaps the teacher who aims at teaching history in a rational and intelligent manner is more likely to get his pupils through the history paper at the Oxford Locals than the teacher whose main aim is to get them through the Oxford Locals is likely to teach his pupils any history."

SIR GEORGE W. KEKEWICH, K.C.B., who has been appointed Secretary of the Board of Education, was secretary of the Education Department from 1890 to 1899, when he became also secretary of the Science and Art Department, in succession to Sir John Donnelly. He was educated at Eton and Balliol College, Oxford, and obtained a first class in classics moderations, and a second class in the final schools. He was appointed an examiner in the Education Department in 1867, and became senior examiner in 1871. Durham University conferred the honorary degree of D.C.L. upon him in 1897, and he was created a Knight Commander of the Bath in the same year.

THE Education Department and the Department of Science and Art ceased to exist under these designations on March 31st. They are now merged in the Board of Education. In future all communications relating to elementary education should be addressed to the Secretary, Board of Education, Whitehall, London, S.W. Letters concerning science, art, and technical education should be addressed to the Secretary, Board of Education, South Kensington, London, S.W.

WE learn that Mr. P. E. Swinstead, the Honorary Secretary of the Assistant Masters' Association, is compelled, owing to ill-health, to resign his office. We are sure that every member of the Association, as well as the numerous educationists with whom Mr. Swinstead has been brought into contact, will hear this news with the greatest regret. We trust that Mr. Swinstead will soon have completely recovered.

THE minute of the Board of Education, dated April 6th, establishing higher elementary schools, should go a long way towards finally dispelling the difficulties which have for some time attended the work of what have been hitherto known as higher-grade schools. As predicted by Mr. William Dyche in our last issue, the higher-grade school is to be recognised as the natural outgrowth of the elementary school. In future all schools of this class must be organised to give a complete four years' course of instruction, and any child admitted to such higher schools must either have previously attended an elementary school for two years or be certified by the Inspector to be qualified to profit by the instruction of the higher school. The age limit for attendance at these schools is fixed at 15, a fact which will interfere with certain successful matriculation classes in some of the better existing higher-grade schools. After November 1st next all newly admitted scholars must commence with the first year's course. In the first and second year courses there must be a qualified teacher for every 40 scholars or less, and in the third and fourth years a qualified teacher for every 30 scholars or less.

THE grants to be paid to higher elementary schools are to be of the inclusive kind that the new Code has introduced into elementary education proper. There is a principal grant and a grant for practical work, and for each year these grants are according to a higher and lower scale. The principal grant is to be for each of the four years in succession (*a*) according to higher scale, 27s., 35s., 47s., and 65s.; (*b*) according to the lower scale, 25s., 33s., 40s., and 55s. The grant for practical work is similarly graded for the various years; thus, on the higher scale, the amounts are, 8s., 12s., 18s., 25s., and on the lower scale, 6s., 10s., 15s., 18s., in the successive four years. The points to be taken into consideration in deciding the scale of payment are (*a*) The suitability of the instruction to the circumstances of the scholars and the neighbourhood; (*b*) The thoroughness and intelligence with which the instruction is given; (*c*) The sufficiency and suitability of the staff; (*d*) The discipline and organisation. The grant for practical work will only be awarded where special provision for such work is made to the satisfaction of the Board.

SINCE 1893 a few students of English training colleges have every year availed themselves of the privilege allowed by the Board of Education of taking a third year of training abroad. Careful inquiries as to the value of this lengthened course of preparation for the future work of its teachers have recently been made by the Board, with the result that a circular has been issued to the authorities of training colleges embodying the principles which will guide the Board in fostering this work for the future. The circular details the methods which will be followed in the selection of students for this foreign training, the conditions which should determine the choice of the place to which the student is to be sent, and the circumstances in which residence abroad is permitted.

A BILL to amend the Elementary Education Acts, 1870 to 893, was introduced in the House of Commons by Sir John Gorst, and read a first time on March 26th. The Bill embodies certain small amendments to existing Acts which the experience of administration has proved to be necessary, and does not propose any change either in subjects to be taught or other purely educational matters.

ART masters know that it is often difficult to provide means for their students to utilise the knowledge and skill acquired by completing a course of art training. They will consequently learn with pleasure that the Board of Education have decided, at the suggestion of the Council of the Society of Arts, to hold during the autumn in the Victoria and Albert Museum, South Kensington, an exhibition of modern illustration. The exhibition will consist of works in black and white intended for book, periodical and newspaper illustrations, and will be confined solely to modern examples of typographical work executed since 1860. This limit covers the time during which photography has been available for reproductive purposes, and during which, consequently, the original drawings have been preserved and are available for exhibition. The Board will be assisted in the selection and arrangement of the drawings by an influential committee. It is proposed that the exhibition shall be opened about November 1st, and remain open for four months. The drawings will have to be sent not later than October 1st.

At the fortieth annual meeting of the Association of Chambers of Commerce recently held in London it was resolved to ask the Government to give grants in aid of teaching commercial subjects such as are at present given to science subjects. The Board of Education will be asked to draw up courses of study in commercial subjects for elementary and advanced grades as is now done for science and art, and to conduct commercial examinations in advanced grades.

The Commercial Education Committee of the London Chamber of Commerce have decided to form centres of examination in the various counties of the United Kingdom, and by such means will provide a commercial examination, the certificates of which will have a generally recognised value. Suggestions for the formation of local centres in London and suburbs may be had, together with forms of application to form a committee for the proper conduct of the examinations, on application to the Secretary, 10, Eastcheap, London, E.C.

The Council of the Society of Arts have determined to add to the existing examinations of the Society an upper and a lower grade, and to revive the system carried on from 1876 to 1879 inclusive, of awarding a certificate in commercial knowledge to candidates who have passed in a certain specified number of subjects in each grade. This certificate will be additional to the certificates granted for separate subjects. The examination in the preliminary or junior grade will be adapted to the attainments of the continuation school pupil, who, after reaching Standard VI. or VII. in an elementary school (age 11 or 12), goes for two or three years into an evening continuation school. The examination in the secondary or intermediate grade will be of the same standard as that of the present examinations of the society. The examination in the final or upper grade will be adapted to the attainments of youths who have gone through a course of two or three years at a higher commercial school, college, or special institution, and are engaged in, or are qualifying for the higher branches of commercial life.

The Archbishop of Canterbury a short time ago addressed a meeting under the auspices of the Rugby and District branch of the National Union of Teachers in the new big school at Rugby. Dr. James, Headmaster of Rugby, presided. There is something particularly gratifying in practical demonstrations of this kind of the essential unity of English education. The masters of public schools and those of public elementary schools are, after all, engaged in the same great work of educating future Englishmen, and both classes of teachers will benefit by knowing more about one another.

When examiners and teachers confer together there is some hope that the questions set in public examinations will really be fair tests of the kind of teaching which the candidates receive in the schools at which they are prepared. Such a conference took place on March 24th at the Girls' High School, Oxford, between science mistresses and examiners of schools. The meeting was held under the auspices of the Association for the Education of Women in Oxford, and there was a large and representative attendance from all parts of the kingdom.

That pupil teachers are willing enough to take advantage of a course of University training when the opportunity presents itself is seen by the spirited competition which took place for the nine scholarships, tenable either at Oxford or Cambridge, of the annual value of £25, which were recently offered by the Pupil Teachers' University Scholarship Committee of Toynbee Hall. This enthusiasm was as marked in the provinces as in London, and we notice with pleasure that five of the scholarships were gained by country candidates. The fact that scholarships for pupil teachers have been offered by the authorities of New College, Oxford, and by King's and Emmanuel Colleges, Cambridge, shows a desire on the part of the Universities to help promising pupil teachers to attend a university.

The Board of Agriculture have again shown their appreciation of the work carried out by the South-Eastern Agricultural College by raising their grant from £800 to £1,000, the maximum possible. The governors are taking active steps to increase the accommodation afforded by the College, which seems to be much too limited for present requirements. A new scheme, to found a branch of the College devoted to horticulture and situated in Surrey, will in all probability be soon laid before the Governors, and it is believed that the Royal Horticultural Society and the adjoining counties will co-operate in the matter.

At the annual meeting of the National Association for the Promotion of Technical and Secondary Education, held on April 6th, a most satisfactory report, presented by Sir Henry Roscoe, was adopted. On the motion of Mr. Hobhouse, M.P., it was agreed that the time has now arrived for further legislation for completing the organisation of secondary education upon the lines recommended by the recent Royal Commission.

The Staffordshire Technical Instruction Committee continue their good work for teachers of various grades in their county. Special classes were last year held, we learn from the last report of the Committee, for the elementary school teachers of North Staffordshire, in practical experimental science, under an instructor specially appointed for the purpose. Classes throughout the county for the instruction of teachers of elementary and secondary schools in art subjects, chemistry, physics, cookery, horticulture and manual instruction, continue with a satisfactory attendance. Teachers have also been assisted in the study of modern languages by grants in aid of the modern language holiday courses, and a special course of instruction was arranged at the County Technical School, Stafford, for teachers in practical gardening schools.

The Committee of the City and Guilds of London Institute have decided that, in counties and county boroughs possessing an organising secretary for the promotion of secondary education recognised by the Science and Art Department, such organising secretary may, on application through the secretary of the Technical Instruction Committee or otherwise, be held responsible, under certain conditions, for the conduct of the institute's examinations and for the establishment of new classes in technology, in accordance with clause 7 of the Science and Art Directory. The committee will, however, continue to require, as a condition for the registration of a class in any technological subject, the approval by the institute of the qualifications of the teacher proposed to be appointed.

IN replying to the criticisms made upon the work of the evening schools in connection with the London School Board during the course of the debate upon the Report of the Evening Schools Committee, the Rev. Stewart Headlam recently gave excellent reasons for regarding the work accomplished as very satisfactory. Considerable misapprehension has arisen by the application, on the part of many critics, of day school methods of calculation to evening school work. The ordinary conclusions based upon average attendance, while fairly accurate in the case of day schools, are of little value when applied to evening classes. It appears that, as a result of freeing the schools, there were in each week of the session with which the report deals nearly 18,000 more students present than in the previous session. The grants for the same session increased from £16,120 to £18,398 in the case of the Education Department, and those from the Science and Art Department rose from £1,209 to £3,287. It is hoped that it will be possible in the future both to slightly reduce the cost per head as well as to increase the efficiency of the evening classes. With these objects in view, it is proposed to combine classes, to increase the number of commercial schools and adult schools, and, to use Mr. Headlam's words—"by arranging time-tables so as to prevent an undue multiplication of classes, by making it the interest of the responsible teachers and of the assistant teachers to have larger schools and larger classes, by gradually getting as teachers only real live men and women who will make the lessons so interesting and stimulating that all who come will want to come again."

THE London Geological Field Class, the object of which is to provide students with a means of acquiring a knowledge of the physical geography and geology of the London district, continues its useful work. The class is carried on by Professor H. G. Seeley, F.R.S., and he will again this year conduct the annual course of excursions. The excursions are made on Saturday afternoons, the first this year being that of April 28th. Full particulars of the first series of visits can be obtained by application to Mr. J. W. Jarvis, St. Mark's College, Chelsea, S.W., who on this occasion undertakes the duties of Hon. Class Secretary.

THE University Extension Summer Meeting will this year be held at Cambridge from August 2nd to 27th. "Life and Thought in the Nineteenth Century" will form the subject of lectures and conferences, and the services of specialists in every department of intellectual activity have been secured to lecture to, and demonstrate before, the students who assemble on this occasion. The lectures on educational progress in the century should prove of exceptional value to teachers who decide to spend part of their holidays at Cambridge, and as an educational exhibition is also being organised, there will be plenty to occupy the attention of this class of visitors. Professor A. V. Dicey and Dr. Augustus Jessop and others will lecture on "National Development." Professor Jebb, M.P., Mr. F. W. Myers, Mr. Churton Collins, and other equally well-known authorities will deal with literary subjects, while among the large array of men of science who will introduce the advances in scientific thought to the students who are interested in this section of the work of the conference, the names of Sir George Stokes, Sir Robert Ball, Prof. J. A. Ewing, and Prof. J. J. Thomson may be mentioned. The Secretary of the Cambridge Syndicate will give full information about the meetings.

A SECOND edition of Dr. G. E. Shuttleworth's "Mentally-Deficient Children: Their Treatment and Training" has been published by Mr. H. K. Lewis. Additional chapters on "Special Instruction" and recent legislation for "Defective and Epileptic Children" have been added.

THE *Girl's Realm* for April contains three articles which deal with different phases of the work in girls' schools. Miss Dorothea Beale, the well-known principal of the Cheltenham Ladies' College, writes on teaching as a career for girls, giving in a most readable form just the information a girl thinking of becoming a teacher will want. Mrs. Hill contributes an interesting account of the Frances Mary Buss Schools, and Miss Sybil Metford reports the experiences of several prominent high schools for girls in the matter of Christmas entertainments.

A MEETING, convened by the Imperial Anglo-Indian Association, was recently held at Calcutta under the patronage of the Lord Bishop of Calcutta, at which it was resolved that the Government of India be asked to sanction the holding of the Cambridge University Local Examinations in India in the interests of the Anglo-Indian community.

WELSH.

THE question of the education of the pupil teachers of elementary schools continues to be discussed. County and local governing bodies, School Boards, and head teachers of primary schools generally seem agreed as to the desirability of handing over their education to the county schools. One body only has attempted a retrograde movement. The committee of the "Federation of Welsh School Boards" prepared a report for presentation to their annual meeting, in which they strongly advocated that School Boards should retain in their own hands the education of their pupil teachers. They were of opinion that the county schools in their present condition were not the most efficient means for offering this education. The question was discussed at the general meeting, but owing to a considerable diversity of opinion on the subject the resolution put to the meeting does not seem to definitely uphold the committee's recommendation. The opposition of this body may probably be accounted for by the fact that it does not consider that School Boards are adequately represented on local and county governing bodies, and that it has no direct representation on the Central Board.

THE death of Principal Edwards, late principal of the Theological College at Bala, is likely to raise a question of importance to theological teaching in Wales. The various religious denominations have hitherto had their separate colleges for the training of their future ministers, one being in North Wales and the other in South Wales. This has meant a very serious drain upon their funds, and the efficiency of the teaching has consequently suffered—so much so, indeed, that some colleges have not been recognised by the University as affording satisfactory opportunities for study for the B.D. degree. Very few students have as yet been able to take this degree, and the theological colleges complain that the standard demanded is far too high. At present the B.D. degree is only granted to students who have previously taken a degree in Arts or Science, and there is no probability of the University's relaxing its demands in this respect. In order to give its students opportunities of obtaining a better general education and of obtaining the required degrees it is possible that there may be some combination of the various colleges and their transference to one or other of the towns in which a University College is situated.

SCOTTISH.

PRINCIPAL STORY has begun in the *Glasgow Herald* a series of articles dealing with the special points in which the equipment of Glasgow University is most defective and its wants are most apparent. These the Principal commends to all those to whom the renown of the University is dear, and whose faith in its ability to fulfil its functions is unshaken by any temporary embarrassments by which it may be hampered." If Glasgow is not to lag behind in the march of educational progress and reform, he shows that it is absolutely necessary to greatly expand the University teaching on its scientific side. In order to effect this improvement both time and money are required, and for the whole undertaking the Principal invites "cordial sympathy and free support."

At the monthly meeting of the Modern Languages Association, Mr. C. D. Campbell, Examiner of Modern Languages to the University of Edinburgh, read a paper on the University Joint Board. The administration of the Board, he admitted, had caused a good deal of criticism and discontent, but the principle that lay at the foundation of the Board was a sound one, the objects of the founders having been to secure co-operation and unity of aim and effort among the Universities of Scotland. A serious defect in the constitution of the Board was its changeability. At present, just as a member was beginning to become useful, he must make room for another member who would be as ignorant as he was at the beginning of his career on it. In such circumstances, continuity of policy was an impossibility. Changes in the *personnel* of the Board were necessary if it was to maintain a healthy and progressive condition, but much less drastic changes than at present would secure that object, and at the same time give stability and harmony to its work from year to year.

At the last meeting of the Governors of Heriot's Trust, Edinburgh, several members referred to the serious handicap imposed by the University authorities on modern languages at the Bursary Examination. The fact that they allowed these languages to rank as graduation subjects equally with Latin and Greek should ensure equality of treatment at the Preliminary Examination. Prof. Laurie stated that the whole subject was at present under the consideration of the University authorities. There was a very strong public feeling on the subject, and numerous memorials had been sent to the University, but they felt that in the face of an ordinance they could do nothing, at least till the report of the Universities Commission was published. This, he expected, would be published in the course of the next few weeks, and the time would then be ripe for taking definite action in the matter.

Prof. Bradley has resigned the Chair of English Literature in Glasgow University, which he has held for the past ten years. His retirement, following closely upon that of Lord Kelvin and Professor Murray, is a serious loss to the University. During the period he has held the Chair, he has probably been the most popular and esteemed Professor in the University, and his great influence over the students has only been equalled in recent years by that of the present Master of Balliol. Professor Bradley intends to devote himself to purely literary work, and the good wishes and high expectations of his Glasgow friends follow him in his labours.

Arrangements have been made by the council of the University College, Dundee, to undertake the training of teachers. The grants made by the Scotch Education Department for this purpose are distributed by the council. Admission to the training college will be in no way limited to those persons who have been pupil-teachers. It will be open to all candidates of eighteen years of age who have passed the preliminary examination of the Scottish universities or hold the Leaving Certificate of the Scotch Education Department, and who really intend to become teachers. The students will attend lectures and classes at the University College and be expected to read for the degrees of St. Andrew's University. Every facility for actual teaching practice is offered.

IRISH.

It is announced that the Bill for amending the Irish Intermediate Act of 1878, and giving the Intermediate Board larger scope in the spending of their funds, so as to enable them to carry out their proposed scheme of reform, will be brought into Parliament immediately after Easter.

The large reforms which are now being introduced into Irish primary schools, in accordance with the report of the Manual Instruction Commission, have been put in practice since April 1st. With the ending of the financial year, March 31st, payment by the results of an annual examination, from which a portion of the teachers' income was derived, ceased. The schools will continue to be inspected and examined, but the teacher will receive either a fixed salary or a salary partly fixed and partly a "continued-good-service" salary, paid quarterly. It is promised that every teacher under the new conditions will have an actual income at least equal to his average income for the last three years. The conductors of convent and monastery schools will be paid by an inclusive capitation merit grant. Workmistresses and industrial teachers will be paid at revised rates not yet announced. Junior library assistants, pupil teachers and monitors will continue to be paid at the existing rates.

Examinations will also largely be abolished in the appointment and promotion of teachers. Principalships will only be conferred on trained teachers—a beneficial change which will tend greatly to increase the number of trained teachers in the schools. There will still be three grades of teachers, but promotion from lower to higher will no longer depend on examination, but upon "training, position in school, ability and general attainments, good service and seniority." The diploma examination at the end of training will be the last examination for teachers.

The curriculum has not, at the time of writing, been published. It is, however, stated to be simplified, and provision will be made to vary it to meet the needs of special pupils and localities. Elementary science, hand and eye training and practical subjects will be introduced. Already three new appointments have been made:—Mr. A. W. Bevis, late director of manual training under the Birmingham School Board, to be a head organiser of manual and practical instruction; Mr. P. Goodman to be inspector of musical instruction, the duties to include his present ones as the Board's examiner in music; Miss Fitzgerald, at present organising secretary for cookery under the Association for the Training and Employment of Women, to be organiser of cookery instruction.

The Trinity College students have behaved with exceptional propriety during the Queen's visit. On the occasion of Mr. Chamberlain receiving his degree in December last, and on the day of the relief of Ladysmith, they sallied into the streets, tore down the Mansion House flag, came into conflict with the people, indulged in free fights, and maltreated the police. The College authorities seemed to do little either to prevent or to punish such conduct. Strong measures were, however, taken by them (it is said, on account of severe representations from the Castle) on the day of the Queen's entry, and the better class of undergraduates gave vigorous help also towards good conduct, with the result that the "Trinity boys" had by no means their usual fun, and there were no riotous scenes or anything to mar the enthusiasm, peace and courtesy with which the Queen was by all classes received.

A Committee has been appointed by the new Irish Department of Agriculture and Industries to consider the buildings, functions, methods and programme of studies of the College of

Science as it will be constituted in its enlarged form. It will be the head and centre of the whole scientific, educational and industrial system the Department will carry on, and the buildings will be erected on ground already secured beside the National Library, Picture Gallery and Museum in Kildare Street. The committee consists of Sir W. Abney, Mr. T. P. Gill, the Secretary of the new Department, Captain Shaw, the head of its industrial section, Mr. Barton, Commissioner of Valuations, and Mr. Spring Rice.

IT is felt in Ireland that the recent debate in the House of Commons on the Irish Catholic University question indicates a distinct advance in favour of the founding of a Catholic University. The great ability and earnestness of the speeches made on behalf of the Catholic claims, and the high position of its advocates, quite outweighed any opposition that was expressed. The reports obtained by Government show indeed that no University such as is asked for exists in any foreign country one receiving State endowment, and yet in close connection with the Church and practically directed by the bishops; but it is felt that in Ireland attempts to make a more secular system acceptable have completely failed, and that such University education would be better than none. Except the few Catholics (about 60 out of 1,200) in Trinity College, and a few more in the Queen's Colleges, no Catholics in Ireland are receiving any University education of a thorough kind, the Royal University being merely an examining body whose graduates can be prepared anywhere. The question, however, is still remote, as it is now impossible that the present Government could take it up.

CURRENT HISTORY.

WE understand that in the present Parliament municipalities are applying for powers enabling them to undertake, among other things, banking, pawnbroking, coal supply, the making of saddlery, tailoring and printing. This increase of interference on the part of Government authorities is our modern method of doing what mediæval folk did by way of gilds. In their days trades were regulated in the public interest, and good things had to be produced for a good price. In the great development of industry in the end of last century and the beginning of this, some of our greatest statesmen despaired of keeping control over the rapidly complicated industrial commonwealth, and Earl Russell said that protection from force and fraud was all that Government could legitimately hope to do well. But after a brief spell of *laissez-faire*, we are developing, in new ways, the old regulations, and our children will find it less difficult to sympathise with mediæval ideas than with those of their grandfathers.

THE Transvaal War has given rise in the House of Commons to a debate on the relations between Government and contractors for supplies to the troops, and we find it said that, if a black list were published which included the names of contractors who had honestly striven to do their best, either it would become difficult to place contracts or prices would have to be raised; and, again, that as long as the Government insisted on having cheap goods, they were not likely to get the best. All these remarks are true and pertinent, but we are reminded by this debate that this care for the welfare of our soldiers and sailors is very modern. In the middle ages soldiers were provided by contract as well as their provisions, and in the great wars of the last century the proportion of men who died from disease rising from want of due care was far larger than those who died by the enemy. Who does not know of the Walcheren expedition, or of the ghastly revelations of the Crimea?

THE Government has decided not to accept the intervention of any Power in the present war. That means, we suppose, that the war is to be pursued *à outrance*. The opinion has been expressed among us that there will be no treaty at the end of the war, that annexation is the only possible ending thereof. We are reminded, though the cases are not quite parallel, of the great Civil War in the U.S.A. The Northerners were greatly offended—and most people now think justly so—at the attitude of friendly neutrality towards the South adopted by Great Britain and other European Powers during that struggle. There was no treaty ending that war, because the "rebellion" (so the Northerners regarded it) was simply put down. The territory of the Southern States was annexed, and the U.S.A. proceeded to deal with it at their pleasure.

ON LITERARY TEXT-BOOKS FOR CHILDREN.[1]

"I AM eight years old to-day. I gave up all my gilt books, with pictures, this day twelvemonth, and to day I give up all my little story books, and I am now going to read such books as men and women read."

So says Kate Stanley, the pattern child of that once popular but now forgotten book, "Cœlebs in Search of a Wife." And Mrs. Hannah More goes on to justify her heroine by the argument that the large number of books written especially for children is a hindrance rather than a help to true education. "The too great profusion of children's books protracts the imbecility of childhood. They arrest the understanding instead of advancing it. They give forwardness without strength. They hinder the mind from making vigorous shoots, teach it to stoop when it should soar, and to contract when it should expand."

Antiquated as the sentiment sounds, and ignorant of child psychology as the author was, these words yet contain a germ of truth. It is a fact that many children's books even at the present time, though greatly superior to those of a hundred years back, as may be seen from an inspection of a curious reprint of selections lately issued,[2] are utterly worthless as literature, and therefore really harmful to their readers. Although their moral tone is generally high, it is very conventional, and is enforced by stories of extreme improbability, couched in commonplace or careless English. And even those that reach a higher level, and are healthy, sensible and well written, are not distinguished by any high literary quality. They do not train the taste of the reader, nor guide him on the way to the appreciation of fine literature. And as long as no effort is made to bring such literature within the reach of boys and girls, not only by judicious editing, but by the personal guidance of those interested in education, so long will they, as children, be satisfied with these indifferent fictions, and, as adults, confine their reading more and more to newspapers and magazines.

Still it is evident that one must not take Hannah More's advice literally, nor force on children of the tender age of eight "such books as men and women read," even if it were taken for granted that all grown-up people are competent guides in the matter. Place such a book as "Gulliver's Travels," undiluted and unabridged, before a boy of eight, and, except in very occasional instances, he will turn from it in disgust, simply because much of it is unintelligible to him. Oblige him to read it by himself, without any explanation or omission, and he will probably hate for ever the names of Lilliput and Brobdingnag, dearer to some of us than those of Whittington or Prince Charming. Yet this is one of the most delightful of all children's stories, if only it be presented in a suitable form. It is as senseless to suppose that a child will read, in the original form and without guidance, such a book as this, as it would be to expect an unfledged nestling to forage for himself in the fields and hedges. The result in both cases would be dyspepsia or starvation.

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[1] "Blackwood's Literary Readers." (Blackwood.) 1899. Bk. I., 1s.; Bk. II., 1s. 4d.; Bks. III. and IV., 1s. 6d. each.

"English Prose." Edited by J. Logie Robertson, M.A. (Blackwood.) 1898. In two parts, 2s. 6d. each.

"English Verse." Edited by J. Logie Robertson, M.A. (Blackwood.) 1896. In two parts, 1s. 6d. each.

"Specimens of English Prose." Selected by Bertha M. Skeat, Ph.D. (Blackie.) 1899. 1s. 6d.

"Macmillan's Advanced Reader." (Macmillan.) 1898. 2s.

"The Temple Reader." Edited by E. E. Speight, B.A. (Horace Marshall.) Second Edition. 1898. 1s. 6d. net.

"The New English Poetry Book." Edited by E. E. Speight, B.A. (Horace Marshall.) 1900. 1s. net.

[2] "Forgotten Children' Books." A. W. Tuer. (Leadenhall Press.)

But there is no reason why good adaptations of literary classics, presented in a form suitable for young people, should not be made the staple of their mental diet, only in this case the books must be as cheap as those they are intended to supersede; they must be equally attractive in general appearance, and their reading should be at first accompanied by intelligent explanation on the part of some person intimately acquainted with the working of the child mind. Many attempts at such adaptations of good literature have been made, but their value has been impaired, because, while the original was considered too difficult for boys and girls, or was inaccessible to them from being composed in a foreign tongue, the language of the translation or paraphrase was also unsuitable for them. Take, for instance, such a book as Hawthorne's "Tanglewood Tales;" it is written by a master of style, but it abounds in long words of Latin extraction, which form stumbling-blocks at every step. Kingsley's "Heroes" is far better suited to the purpose, and far more generally enjoyed by children. The objection of difficult language applies, in a less degree, to Lamb's "Tales from Shakespeare," and in a greater to his adaptation of Chapman's "Odyssey." What would most children under twelve make of such a sentence as this: "The subsistence which they could hope to draw from fowling or fishing was too precarious to be depended upon; there did not seem to be any chance of the winds changing to favour their escape, but they must inevitably stay there and perish, if they let an irrational superstition deter them from the means which nature offered to their hands." It may be argued that one great advantage of such a book is to enlarge the vocabulary, and that the sense of new words can be guessed at from the context; but they should not be in so large a proportion to those already known.

Doubtless the best way to introduce children to such stories is by word of mouth. Boys and girls of from seven to nine years of age will listen eagerly to the adventures of Ulysses and Æneas, if they are told simply and abundantly illustrated on the blackboard, or by means of such pictures as are to be found in the admirable versions of Dean Church, which, however, are too difficult for children of this age. And if to the pleasure of listening can be added a little manual work, such as colouring pictures reproduced from these designs, the lesson becomes almost ideal. Stories from the Greek and Latin poets may be followed by those from the northern myths; Balder and Beowulf are heroes quite as fascinating as Telemachus and Ascanius. After this, keeping always to chronological order, come paraphrases of "The Knight's Tale," of stories from Malory's "Morte d'Arthur," or the "Mabinogion," the "Fairy Queen" (an inexhaustible source of delight), and from Shakespeare's plays. Milton's "Comus" is another excellent subject for adaptation, and so on through the whole course of our literature. As the children grow older a few words should be said about the writer of the story and of the time he lived in, and thus the first outlines of the history of literature can be given by the way.

But the time comes when the children must be introduced to the originals, and it is a mistake to long delay this first-hand acquaintance. It is wonderful what children will rise to, and what they can be led to appreciate if their taste has not already been vitiated by indifferent fare. And it is here that the use of literary text-books comes in. In recent years a wonderful improvement has taken place in the reading-books provided for both secondary and primary schools, but much yet remains to be done. The chief difficulty in the preparation of such books seems to be this, either they are the work of scholars who, with a thorough knowledge of the subject matter, have very little acquaintance with the minds of children, or they are the work of practical teachers of deficient scholarship. Thus, in a very interesting series of readers, apparently intended for use in elementary schools, an attempt is made to introduce children to literature, not only by extracts from various classics, but also by paraphrases from Chaucer, Spenser and Shakespeare; but the good effect is counteracted by inaccurate statements, such as, "Poor Chaucer could not spell very well," or by slovenly English, as, "All he (the dragon who persecuted Una's father and mother) had to eat for four years was *what he could pick up in the way of knights*," or by attempts to bring things within the childish horizon by taking away the mystery with which they are invested by the poet's imagination, as in a well-meant explanation of the appearance of the witches in Macbeth, who, we are told, were not really witches, but three old women who pretended, for the sake of gain, that they possessed magic powers. These lapses are the more to be regretted as the idea of the books is so good, and as they contain so much that is true literature. But if the editor supposes such poems as Wordsworth's "Cuckoo," Shelley's "Autumn" and Shakespeare's "When icicles hang by the wall" to be within the grasp of his audience, there seems no very cogent reason why in paraphrasing others he should descend to such vulgar colloquialisms as the one quoted above. Paraphrase and adaptation should aim at combined simplicity and dignity, and it is quite possible to tell a story to children in language that is at the same time stately and familiar.

Another series of readers, intended for older pupils, has been prepared by Mr. Logie Robertson. The editor has followed the sound method of combating the prevalent error which separates the teaching of literature from that of literary history by providing each of the extracts with a biographical and critical introduction, and he has endeavoured to preserve the symmetry of his excerpts by giving a short synopsis of the portions omitted. But while heartily agreeing with his insistence on a direct knowledge of literature, we would suggest that the introductions and synopses are unnecessary in a book intended for class use. Such material ought to be provided by the teacher, and adapted by him to the class that he is conducting. And besides, the style of the supplementary matter is sometimes a little difficult, even for pupils of from twelve to fifteen years of age, and not always very elevated, as when the editor tells us that "The Canterbury Tales" "in mere length *bulks* nearly as large as all Chaucer's other writings put together." But taking this series as a whole, it may be accorded very high praise as a step in the right direction in the teaching of English literature.

Other books which would be found very useful in providing a first-hand knowledge of literature are the "Specimens of English Prose," selected by Miss Skeat, and Macmillan's "Advanced Reader." The former, which as its name implies contains no poetry except a few verses included in one of Cowley's Essays, is arranged according to the subject matter of the extracts, under the headings Religion, Philosophy, Education, Essays, History, and so on, an arrangement which is not altogether logical, as an essay might very well be philosophical, or historical, or educational. The editor lays much stress on points of style, and provides notes on this at the end of each extract; but it seems a pity to give to the pupil ready digested what a skilful teacher might employ as a valuable mental exercise. The extracts are admirable, with one exception, that from Richardson's "Pamela." We do not know whether this is given as a model of style, or in order to lead the pupil to a more intimate acquaintance with the book from which it is taken, which are two of the aims expressed in the preface. In either case it seems of doubtful value; and the introductory note requires a slight correction, since it tells us that Pamela "becomes her husband's second wife." After twice reading that historic novel, we are still unacquainted with the first "Mrs. B."

Macmillan's "Advanced Reader" excels in arrangement, and is to be commended for including both poetry and prose in chronological order, for there is no reason why these should be separated, as in several of the readers already mentioned. But, like them, it gives no extracts earlier than Chaucer, though Beowulf is mentioned in the preface. A translation of part of this poem and of Alfred's introduction to the "Cura Pastoralis" would be valuable additions. This, however, does not greatly affect the utility of the book, which is especially happy in its selections from the later English writers. The few biographical details provided at the head of the extracts will be found useful by the pupil, while they by no means supply the place of the teacher.

A much more catholic collection of excerpts is contained in "The Temple Reader." They are not confined to our literature, but range from Herodotus to Cervantes, from the "Edda" to Dante's "Inferno" and "Paradiso," though all the great English classics are also represented. The editor has adopted the original plan of connecting the extracts according to sequence of ideas or theme, but the sequence would not always be obvious to a young reader, and for practical purposes chronological arrangement would suit us better. The great charm of the book is its absolute freshness and freedom from conventionality; all the extracts are equally valuable for subject matter and for style, while the introductory mottoes are like gates opening out on fresh vistas of beauty and romance. "The New English Poetry Book," which is intended as a supplement to the "Temple Reader," has the same characteristics of refinement and grace. Nothing in either book is either hackneyed or commonplace. But here we must confess that there is a tendency to subordinate strength and vigour to perfection of expression, and the predominance of sentiment over action in poetry which is to be read at school is open to criticism. But the selection is so exquisite, so steeped in poetic glamour, that it would be ungrateful to insist further on this point. All the books produced under the supervision of this editor are especially to be commended for the beauty of their appearance, which is all the more remarkable considering the low price at which they are issued.

Any of these readers, except, perhaps, the first on our list, would form an excellent introduction to the study of literary history, but they could not be put into the hands of the average child of school age in the confidence that he would read and appreciate them by himself. A good plan is to read them aloud in class, with explanations on the part of the teacher, who should draw attention not only to the subject matter, but also to its arrangement, which may be illustrated by a scheme chalked on the blackboard. Children can be interested in paragraph and sentence structure, and made to understand the beauty and propriety of epithets and similes, far more than is generally supposed, and it is quite worth while to train their critical faculty in this way. After the lesson they can be made to paraphrase the extract with the book open; they will insensibly adopt some of the words of the writer, and thus enlarge their vocabulary at the same time as they arrive at a comprehension of the meaning. There can be no better exercise than paraphrase for showing whether the significance of a passage has been grasped. The reading of each extract should be accompanied by a short account of the author, and in the case of narrative writing the outline of the story from which the passage is taken may be briefly told. No notes should be necessary in a reading book, for the teacher's own knowledge, combined with careful preparation, should be adequate to all demands of this kind; and an explanation given off-hand, or elicited by means of questions, is much more interesting than the reference to a bald statement, usually in small type and in another part of the book.

By the time that one of these readers has been worked through in the manner described—and this may be done with children of ages varying from twelve to fourteen—a very fair knowledge of general literature will have been acquired. The pupils will be familiar with the names of many great writers, and with a small portion of their work, and will also have received a considerable amount of literary training; there will be some chance that when the guidance of the teacher is withdrawn they may be able to discriminate between the good and bad in literature. And if by familiarity with these models they may have gained some feeling for style, and have learned to imitate them, however remotely, that also is a consummation which would be a decided boon in these days of slovenly facility.

C. T.

RECENT SCHOOL BOOKS.

Modern Languages.

Specimens of Modern French Prose. Edited by H. E. Berthon. 232 pp. (Macmillan.) 2*s.* 6*d.*—A very convenient selection of ten short stories by French writers of repute; the only tale to which exception might be taken is Halévy's "L'Héritage." M. Berthon has furnished the stories with short biographical and literary notices of the authors represented, and with sufficient notes. Those on the subject matter are particularly good; the larger number naturally deal with points of grammar, which are clearly explained, or give renderings into English, in which there is perhaps rather too much room given to slang. The proof has been read with great care. The book will be welcome to many teachers who prefer not to spend a whole term over a single book.

E. About. Le Roi des Montagnes. Edited by G. Collar, B.A. xii. + 268 pp. (Nelson.) 2*s.*—This story, with its rather forced humour, seems to have lost none of its popularity, and so we have to record another edition of it, the only novel feature of which appears to be a historical introduction (two pages) dealing with the mythology and history of Greece. The notes mainly consist of renderings of more or less difficult expressions in the text, which are often neat and usually satisfactory. There are also exercises similar to those in Mr. Siepmann's series; and a vocabulary, which is, unfortunately, anything but complete.

C. Normand: L'Émeraude des Incas. Edited by the late F. Aston Binns. xviii. + 156 pp. (Macmillan.) 2*s.*—The work of editing this text was not completed when Mr. Aston Binns' untimely death occurred; Mr. T. H. Bayley undertook to see it through the press. The story is full of incident, and is suitable for rapid reading. The notes are thoroughly satisfactory, and the vocabulary has been compiled with commendable care. There are appendices for retranslation.

E. Daudet: La Tour des Maures. Edited by A. H. Wall, M.A. xviii. + 134 pp. (Macmillan.) 2*s.*—This, like the volume just noticed, belongs to the elementary section of Mr.

Siepmann's Series. There is plenty of movement in the short story, which only takes up 58 pages of large type, and can easily be read in half a term. The notes are good, but the vocabulary is incomplete.

The French Irregular Verbs. Arranged by A. Thirion. 64 pp. (Hachette). 6*d.* This is the twelfth edition, revised and enlarged, of a small handbook containing the irregular verbs in tabular form. It has evidently been found useful; it is certainly clearly printed and convenient for reference.

Elementary French Grammar. By C. S. Le Harivel. xvi. + 120 pp. (Oliver and Boyd.) 1*s.*—A neatly arranged little book, on the lines of the grammatical method, that is to say, with rules in the first place, and then sentences for translation from and into French. There is also an introduction on the pronunciation, of questionable value. Thus we are told that *a* in *rat* has "the short sound of *a* as in 'sofa'; rather broader in *bras;* broad, like 'father,' in *blâme.*" Again, "the acute accent gives a hard, sharp sound to . ." There is much careful work in this little grammar.

Key to Appendices of J. Verne's "Le Tour du Monde." 50 pp. (Macmillan.) 2*s.* 6*d.* net. Teachers will be glad to know that the key to this book is now available. It is compiled with the care to which we are accustomed in the volumes in Mr. Siepmann's series.

Gemau Ceiriog i Blant. By E. D. Jones, M.A. 56 pp. (Hughes & Son, Wrexham). 6*d.* An admirable selection of Ceiriog's poems, made with much taste and discretion for the use of boys and girls in the county schools of Wales. The poems will appeal from the first page to their innate love of nature, to the imperishable hold which the mountains have upon them. To Ceiriog, as intensely as to Wordsworth, the sounding cataract was a passion; the tall rock, the mountain and the deep and gloomy wood were to him, too, an appetite. A few notes have been added where necessary, and the printing and binding are all that could be desired. The book deserves to be widely used, and it is to be hoped that Mr. Jones will bring out similar selections from other Welsh poets and prose authors.

Der Scheik von Alessandria und seine Sklaven. By W. Rippmann, M.A. 183 pp. (Cambridge University Press.) 2*s.* 6*d.* —The notes to this story are commendably brief and to the point, and their most valuable feature is their usefulness in calling attention to points of idiom, the vocabulary also being similarly furnished with idiomatic uses of words and expressions. We are glad to express agreement with Professor Rippmann on the opinion included in the preface as to the uselessness of elaborate notes to young boys.

Classics.

Greek Melic Poets. By H. W. Smyth, Ph.D. cxliii. + 564 pp. (Macmillan.) 7*s.* 6*d.*—This is a book of very great use and interest. The term "melic," which is certainly better than "lyric," as including in its scope productions meant for flute accompaniment, is not used by the editor to cover the elegiac and iambic writers whose works are contained in Bergk's "Anthologia Lyrica." To the other authors whose fragments are contained in that collection are added selections from Pindar and a gratifying amount of the recently discovered work of Bacchylides. In connection with this last author the editor has collected and arranged lists of new words to be added to our lexicon. The Introduction deals at length with the various forms of μέλος, and discourses pleasantly of dithyramb, hyporcheme, and the like. In the notes we find interesting appreciations of the several authors the fragments of whose writings are dealt with—alas, that they should be fragments, of Sappho especially—and very full annotations and illustrations of the subject-matter. In an appendix is inserted the ancient melody, in staff notation, of the "Hymn to Apollo." Altogether an excellent contribution to the study of old Greek poesy.

Scala prima: a first Latin Reader. By J. G. Spencer, B.A. 132 pp. *Scala mediæ: a Latin Reading-book.* By P. A. Underhill, M.A. 113 pp. (Bell.) 1*s.* each. These cheap little books will be found to form excellent stepping-stones to the same publishers' "Illustrated Classics." The former contains 26 pages of simple sentences, and then proceeds to easy passages after the manner of "Gradatim," followed by notes and vocabulary; the latter consists of extracts from Eutropius and Cæsar, Book I. Both are illustrated in the style to which we are accustomed in the "Series" edited by Mr. Marchant for this house. The annexed cut is reproduced from Mr. Underhill's book.

Demosthenes On the Peace, Philippics II. and III., and On the Chersonesus. By J. E. Sandys, Litt.D. lxxii. + 260 pp. (Macmillan.) 5*s.*—Like all Dr. Sandys' work, this volume is marked throughout by evidences of deep and accurate research, and of wide and tasteful scholarship. The treatment of the speeches is full and adequate, and without any annoying display of excessive annotation or what we may call "fussy" comment. There is in the notes wealth of illustration by the quotation of parallel passages, and in one place (Chers., § 12) is given an apt extract from a *Times* article on our Chinese policy.

Lysias Eratosthenes and Agoratus. By J. Thompson, M.A., and T. R. Mills, M.A. 118 pp. (Clive.) 3*s.* 6*d.*—We have here a very useful edition of these two speeches of an orator whose characteristics are grace and simplicity. Full justice is done to him in the Introduction, and in the notes we are glad to remark the absence of super-luxuriance, and the inclusion of apparently all that will help to the right understanding of the author.

Livy. Book V. By A. F. Hort, M.A. 171 pp. (Rivingtons.) 2*s.*—This is another of the Middle Form Classics, some of which we have noticed before. Mr. Hort has kept his purpose in view, which is to give just help enough, and not to be led into superfluities of any kind. The book is to be recommended to those who desire a sensible method of assistance in teaching and learning the author.

The Andromache of Euripides. By A. R. F. Hyslop, M.A. xx + 132 pp. (Macmillan.) 2*s.* 6*d.*—The editor has performed his task with diligence and skill. His annotations are sound and luminous, and yet the character of the play leaves room for doubt whether his attempt to get it "read in the upper forms of our English schools" will succeed. Two points of detail are worth mentioning: Mr. Hyslop's rearrangement of ll. 394-405 is convincing, and his one etymological note that we have observed, on l. 167, is decidedly unhappy.

Roman History. By Dr. Julius Koch. 180 pp. (Dent.)—Here we have in compact compass the outline of the history of Rome from pre-historic times down to the time of the last of the Western Emperors, A.D. 455, which will be found useful where a general conspectus of events without a great mass of detail is required. The translation from the German is by L. D. Barnett, M.A.

Edited Books.

Ivanhoe. With Introduction and Notes by I. Higham. 47 pp. (Black.) 1s. 6*d.*—Much may be said for the growing custom of making class reading books of novels, and no little against it; but the selection of the "Waverley" series for use in this way is open to few real objections. The present volume has certainly given very little trouble to the editor. His introduction is brief, and his notes few and (sometimes) far between. Such as they are, they have the merit of cleverness; but, in dealing with a pronounced antiquarian like Sir Walter Scott, who never forgot his intellectual hobby for an instant, it is surprising to find how brief Mr. Higham's references are. His note upon Scott himself also leaves much to be desired. If the object of this volume be to give Scott's text, garnished with as little of an editor's views as possible, this edition might be highly praised. But, as a serious effort to popularise one who was nothing if not learned, it is by no means happy. It may, however, serve a temporary purpose somewhere about the third form of an average second-grade school.

As You Like It. (Blackwood's School Shakespeare.) By R. Bromley Johnson. 171 pp. 1s.—Editions of this play are multiplying apace, and, while several are better, it is impossible not to praise this one. The introduction contains a mint of matter very skilfully condensed; and at the end a couple of paragraphs dealing with the history of the play on the stage, and as the inspiration of various English composers, are a very happy thought. The latter subject is, however, dealt with very inadequately, even as to outline. The most interesting feature of the notes is a sketch of Lodge's novel, from which this play was constructed by Shakespeare. As a preface to each act the corresponding section of the earlier novel is briefly given. The glossary is very good and complete; altogether the volume makes a very handy and useful school-book.

Text-Book for Morning and Evening Prayer. By Rev. Septimus Buss, LL.B. 96 pp. (Rivingtons.) 1s. This little tractate is written to support the contention that "The Church of England is an inheritance from our Saxon forefathers, and is a lineal descendant from the Ecclesia Anglicana of Magna Charta." It is specially intended to serve in the preparation of candidates for the Oxford and Cambridge Local Examinations, and perhaps the most valuable thing in it is a large selection of examination papers. This manual has the merits of conciseness and clearness, and the fact that it is written to support a view does not entirely destroy its interest. Students will find its historical statements deserving of much critical attention.

History.

The Matriculation History of England. By C. S. Fearenside. 352 pp. (W. B. Clive.) 3*s.* 6*d.*—This is another of the admirable compendiums issued by the University Correspondence College for the benefit of candidates for the examinations of the University of London. It covers the requirements of the Matriculation examination, being a sketch of "the History of England to the End of the Seventeenth Century, with the Geography relating thereto." Like Mr. Fearenside's other works with the same object in view, the manner is more original than the matter; but it is a manner which will compel attention. The carefully preserved balance and proportion with which the various divisions of the subject are presented, and the accuracy with which the leading "Notes" of each period are brought before the minds of students, are to be commended. The tables, pedigrees, genealogies, and lists of contemporary rulers will also facilitate a learner's work, and direct provision is made for the study of history as a series of problems, without which it is apt to degenerate into names, dates, bald events, and become a mere exercise of memory, supplemented by considerable guesswork. Any student who can find time to read a work like that of John Richard Green's will find that a current reference to the volume before us will enable him to clench his knowledge of many points with an absolute mastery. To the ordinary candidate for examination, whose time is limited, the volume will be most suitable. The maps are excellent, and the index very full.

A History of the English Church. By Dean Spence. 250 pp. (Dent.) 1s. net.—The story of the English Church is well told from the moderate Anglican standpoint. There seems to be some unnecessary repetition here and there, and, though the Puritans are treated more fairly than is usual in such histories, the Commonwealth period does not yet receive the historically-minded treatment that one looks for in these days. With these exceptions the book is a very serviceable history of England on its ecclesiastical side.

Dante. By Edmund G. Gardner. xi. + 159 pp. (Dent.) 1s. net.—An excellent little book, in which the history is exact, and the account of the poet's writings enlightening and thorough. No better introduction to the author of the Divina Commedia for English readers could well be conceived.

Geography.

The "Diagram" Map Series. Designed by B. B. Dickinson, M.A., F.R.G.S., and A. W. Andrews, M.A., F.R.G.S. (1) Coloured Hand Maps, 12 × 12½ in., 1*d.* each. (2) Outline Class Maps, 9 × 10 in., ½d each. (Philip.)—The maps in this series are the best at present available for use in teaching the science of geography. The coloured maps show the chief rivers and important tributaries and other geographical features, by shades of five or six grades of blue or brown; the outline maps give the coast line, chief rivers and their tributaries, and a few dots to indicate the positions of important places. In one corner of each map the whole or part of the British Isles is shown upon the same scale, so that the relative dimensions of various countries and continents are impressed upon the minds of the pupils. The coloured maps are particularly instructive. With the elementary fact in mind that water flows from high to lower levels, a student can understand at once, by an examination of the maps, how the general directions of the great rivers are determined. In most maps far too much prominence is given to the trend of mountain chains, while the positions of extensive elevated regions are left out of account. It is most important that a knowledge of the *relative* elevation of the land should be obtained at an early stage of a course in geography, and these maps provide an admirable means for acquiring this knowledge and for using it. The details of physical, political and commercial geography can be filled in upon the maps, and the outline maps can be used in connection with them as an improved kind of memory map, upon which various distributions of things and conditions may be recorded. Though in the teaching of geography maps are good servants, they may be bad masters. But given first-rate maps and the ability to read them, they are a most valuable aid to the scientific study of the earth's surface. For this reason we have no hesitation in saying that the maps designed by Messrs. Dickinson & Andrews should be adopted wherever it is desired to impart sound and reasonable instruction in geography.

A Practical Method of Teaching Geography (Europe). By J. H. Overton. 23 outline maps. (Cassell.) 6*d.* Provided that these maps are only used by pupils who have an intelligent comprehension of cartography, they are well worthy of adoption, especially in schools preparing pupils for University Local Examinations. Tracing paper is interleaved with the maps, and after tracing the outline and inserting the geographical characteristics printed upon some of the maps, the pupil is expected to put in the details, from memory, upon tracing paper and blank outline-maps provided for the purpose. As a means of obtaining a knowledge of the boundaries, size, river-systems, capitals, ports, &c., the maps may be used with advantage. They are remarkably cheap, and will be found of real assistance in the teaching of geography.

Arnold's Coloured Geographical Pictures. Edited by W. L. Wyllie, A.R.A. 30 × 20 in. (Edward Arnold.) Unmounted 1s. 6*d*; mounted and varnished, with rollers, 2*s.* 6*d.* A common objection to the wall diagrams frequently used in schools to represent natural objects and phenomena, is that they are inartistic. Here, however, we have a series of pictures against which this soft impeachment cannot be made. The subjects of the pictures are "Portsmouth Harbour," "Land's End," "An Arctic Scene," "Mont Blanc," "Vesuvius," "A Swiss Glacier," "Desert and Pyramids" and "Hong Kong." A general view of a harbour, cape, frozen sea, mountain, volcano, glacier, desert and island, is thus obtained, and a pupil who regards the pictures is led to consider the actual appearances of these formations instead of associating them with definitions and text-books. As illustrations of object-lessons in geography, the pictures should, therefore, be of distinct service, and as ornaments for the walls of a school they are striking and effective. To our minds, the most instructive pictures are those of "Land's End" and "Vesuvius." The "Arctic Scene" is too limited to be typical, and, though the picture of the glacier may be artistically faithful, it is not a good representation of the general characteristics of glaciers. This notwithstanding, the pictures are distinctly superior to many of those designed to adorn the school.

Mathematics.

Longmans' Elementary Algebra. By W. G. Constable, B.Sc., B.A., and J. Miller, B.A. viii. + 264 pp. (Longmans.) 2*s.* (with answers, 2*s.* 6*d.*; also in 3 parts, 9*d.* each). This is likely to be useful as a collection of rules and examples for class-drill. The large number of oral exercises is a good feature. It is not suited for students working by themselves; very little theory is given, and this is superficial and sometimes misleading. Teachers who use the book will do well to remember that a boy might work right through it without learning any real algebra at all. They must supplement its deficiencies, and exercise their powers of selection. Ten per cent. of the examples, or even less, will be quite enough for any single boy to do.

The Teaching of Elementary Mathematics. By D. E. Smith. xvi. + 312 pp. (Macmillan.) 4*s.* 6*d.*—This is an excellent book, distinguished by common-sense and sound judgment. The historical outlines are to the point; the pedagogy is practical and free from fads, and the references are not only numerous, but valuable, the works cited being those of real importance and interest. Principal Smith's remarks upon the absurdity of much of the current school arithmetic, on the educational value of algebra, if properly taught, and upon the mistake of providing too much apparatus in teaching solid geometry, so entirely agree with our own views, that we feel some diffidence in praising the book as much as we feel inclined to do. But apart from this "personal equation," we have no hesitation in recommending the work to all mathematical teachers.

The Mathematical Gazette. Edited by W. J. Greenstreet, M.A., with the co-operation of F. S. Macaulay, M.A., D.Sc., Professor H. W. Lloyd Tanner, M.A., F.R.S., and E. T. Whittaker, M.A. Vol. i., No. 20. 323-328 pp. (G. Bell and Sons.)—The Mathematical Association deserves all encouragement in its effort to provide, by means of this monthly periodical, matter of interest for mathematical teachers, especially in schools. A mathematical master, however competent, seldom has the leisure to keep abreast of current research, but it is a great pity when he resigns himself to routine, and everything that can be done to sustain his interest, and bring him into touch with recent ideas and methods, is of the utmost importance. The school teaching of mathematics, and the prevailing type of examinations, both require serious amendment; it is to be hoped that the Association will succeed in helping to bring this about. The March number of the *Gazette* contains the second part of a commentary on von Staudt's "Geometrie der Lage," by Miss C. A. Scott; notes on trigonometrical porisms and the trilinear co-ordinates of the focoids by Messrs. Bromwich & Davis; a review of Fitzpatrick and Chevrel's "Exercices d'Arithmétique," by Mr. Workman; and a selection of problems.

Euclid's Elements of Geometry. Books I.-IV. Edited by C. Smith, M.A., and S. Bryant, D.Sc. viii. + 286 pp. (Macmillan, 1890.) 3*s.* This has already appeared in separate parts, and obtained a favourable reception, on the whole well deserved, although there is not much to distinguish this edition from others which preceded it. With one exception, the oversights of the original issue appear to have been all corrected. The authors (in common with many others) give an incorrect list of inscribable polygons. The necessary and sufficient condition that a regular polygon of n sides may admit of description by rule and compass is that $n = 2^a pqr \ldots$ where $p, q, r, \ldots$ are different primes, each of the form $2^m + 1$. Thus the list begins with 2, 3, 4, 5, 6, 8, 10, 12, 15, 16, 17, 20, and includes, for example, $n = 510 = 2.3.5.17$, which is solved by observing that

$$\frac{1}{510} = \frac{1}{4}\left(\frac{1}{15} - \frac{1}{17}\right) = \frac{1}{4}\left\{\frac{1}{2}\left(\frac{1}{3} - \frac{1}{5}\right) - \frac{1}{17}\right\}$$

All this, too, refers to construction by *rule and compass.* The term "geometrical construction" (p. 265) is too vague. Any angle may be trisected by a simple geometrical construction if the use of conics is allowed.

Elementary Illustrations of the Differential and Integral Calculus. By Augustus De Morgan. viii. + 144 pp. (Kegan Paul, Trench, Trubner & Co.) 5*s.*—To reprint this tract of De Morgan's was a very happy idea. As an introduction to the Calculus it is still in many ways unsurpassed, and should be read by every beginner. In this reprint the reader has the advantage of improved typography and a useful bibliography. For the sake of students with lean purses, we could wish the price a little lower.

Graduated Exercises and Examination Papers in Book-keeping. By P. Murray. viii. + 230 pp. (G. Bell & Sons.) 2*s.* 6*d.*—A collection compiled mainly from the papers set by the Irish Board of Education, the Bank of Ireland, and the Civil Service Commissioners. A key is in course of preparation.

Science and Technology.

Lessons in Elementary Physiology. By Thomas H. Huxley, LL.D., F.R.S. Enlarged and Revised Edition. xxiv. + 611 pp. (Macmillan.) 4*s.* 6*d.*—Sir Michael Foster and Dr. Lea have done teachers of physiology a great service in preparing a new and revised edition of Huxley's widely-known "Lessons in Elementary Physiology." Many teachers desiring to continue the use of this book in their classes have for some years felt that, while its style was perfect, it had got somewhat out of date owing to the rapid development of physiological science. The revisers, with their deep-felt respect for Huxley's memory, were the very persons to undertake to add to and alter the book where necessary, and the work has been done with consummate ability. Wherever possible the original, clearly-expressed explanations have been left as they were written by Huxley, and the additions, the lucidity of which compares favourably with that of Huxley himself, will ensure the continued popularity of the volume as the best introduction to this fascinating and important science. The whole book has been reset, and, by the help of judicious typing, its attractiveness has been greatly increased.

Practical Chemistry. Part I. By William French, M.A. xvi + 136 pp. (Methuen.) 1*s.* 6*d.* Mr. French has drawn up an excellent series of experiments for young beginners in chemistry. While there is naturally very little room in such a book for anything new to teachers of the subject, the method of treatment is throughout that of a practical man who is familiar with each of the difficulties experienced by boys and girls beginning the experimental study of science. The course of work covers the subjects included in the syllabus for Evening Continuation Schools and that drawn up by a committee of the Headmasters' Association, but the order of treatment is the author's own. Mr. French very rightly leaves many inferences to be drawn by the pupil, but where a little guidance will save time without jeopardising the development of the young experimenter's powers of observation, a judicious hint or a little suggestive information is offered. In short, we have the well-known heuristic method with certain wise modifications. The book is attractively printed and abundantly illustrated, but it is a pity that some of the figures have been so much reduced in size. Figs. 5, 14 and 15, for instance, might with advantage be two or three times as large. We can however, with confidence recommend this book.

An Introduction to Science. By Alex. Hill, M.A., M.D. 137 pp. (Dent.) 1s. net.—This introductory volume to the "Temple Encyclopædic Primers" is a dainty little book intended rather "to give definiteness to the general impressions of any amateurs of science who have attended meetings of the various learned societies during the last few years" than to serve the purpose of introducing young people to the methods of science. Dr. Hill's presentation of first principles, which fills about half the pages, is delightful, both for its praiseworthy fairness and its power of stimulating thought. It would be difficult to imagine anything more suitable, as a piece of general reading, to be put into the hands of boys of the sixth form on the modern side of a public school. The science master himself would, we are sure, not only benefit by a careful study of Dr. Hill's words, but be equally certain to obtain a few hours' quiet enjoyment in his company. The primer is divided into two sections; the first is concerned with the first principles referred to, and the second includes half-a-dozen essays on "The Age of the Earth," "The Ultimate Constitution of Matter," "The Origin of Species," "The Cause of the Coagulation of the Blood," "The Function of Nerve-fibres and Nerve-cells" and "Microphytology." We hope the primer will have as large a sale as its excellence deserves.

A Primer of the Physiological Action of Alcohol. By Edwin J. Norris, M.R.C.S., L.R.C.P., F.S.A. x. + 62 pp. (Swan Sonnenschein.) 1*s.* net.—Mr. Norris intends his small volume as a text-book for those Board Schools where lessons are given upon "Temperance Physiology," as well as for senior classes of Bands of Hope. After a short account of the manufacture and composition of beer, wine and spirits, the digestive organs, the liver, the blood-vascular and nervous systems are briefly described, and the effects of alcohol upon their structure and functions are enumerated. Having had considerable experience in teaching, Mr. Norris writes in a way which will be understood by young students.

The Nervous System of the Child. By Francis Warner, M.D. (Lond.), &c. xvii. + 233 pp. (New York: The Macmillan Co.) 4*s.* 6*d.* net. Most readers of THE SCHOOL WORLD are familiar with the work which has been accomplished by Dr. Warner. The articles which he contributed to this paper in the early months of last year have taught them to know that "many conditions leading to success or failure in the outcome of the later educational years depend upon the care bestowed during infancy and early childhood." The brain is an organ of the body, just as the heart is, and the parts of the brain can act separately and perform different functions. The teacher who is anxious to do his best for the pupils entrusted to his care must be able to interpret the physical signs which explain brain conditions, and Dr. Warner teaches him how to do so. There is no more hopeful sign for the education of the future than the introduction of scientific methods of observation into the class-room. In the old days teachers diagnosed all cases of inability to properly do the work of the class as laziness, and all instances of the absence of prompt response to a command as disobedience. But, thanks to the efforts of Dr. Warner and other physiologists, all that is being changed. The actions of the child represent the resultants of a combination of brain conditions which are capable of being profoundly influenced by the child's environment and the suggestions of the instructor. It is imperative, therefore, that teachers should know how to observe and what inferences to draw from their observations. Dr. Warner in this book gives them much of the guidance they require. The volume should be read by every earnest teacher.

The Frog. By the late A. Milnes Marshall, F.R.S., &c. Edited by G. H Fowler, B.A., Ph.D. Seventh Edition. x. + 168 pp. (Nutt.)

Elementary Practical Chemistry. By Frank Clowes, D.Sc., and J. B. Coleman, A.R.C.Sc. Third Edition. xvii. + 282 pp. (Churchill.) 3*s.* 6*d.*

Both these books are so well known and deservedly so popular that it is unnecessary to review the revised editions which have now been published.

Miscellaneous.

Medical Indoor Gymnastics. By Dr. G. M Schreber and Dr. Rudolf Graefe. Translated from the 26th German Edition by Herbert A. Day. pp. x. + 98. (Williams & Norgate.) 3*s.* net. Teachers of physical exercises, and everyone who desires to know how the body can be kept in a perfectly sound condition by simple indoor gymnastics, should see this book and act upon the advice contained in it. No skill is required to perform the movements described, and no apparatus. The exercises are arranged upon a scientific basis, so as to strengthen and develop all the muscles of the body. Numerous illustrations show how to carry out the directions, and by following the advice given it is possible for the young and old of either sex to maintain the body in perfect health with the least inconvenience and in the shortest time. In addition to the series of hygienic exercises for the normal individual, a number of special exercises for such common ailments as can be best treated by using the methods of medical home gymnastics are described. We particularly commend the book to the attention of teachers as containing a well-planned series of exercises designed to preserve health by natural activities.

Elementary Exercises on Pitman's System of Shorthand. By S. T. Cooper. (Midland Educational Co.) 4*d.* The special feature of these exercises is the illustration of the rules for indicating the presence or absence of a vowel in any part of a word without actually inserting it. There are several useful hints given, and twenty exercises supplementary to those in the "Instructor."

Victorian and Patriotic Songs. Written and Composed by John Taylor. 24 pp. (Philip & Son.) 1s. Mr. Taylor has here brought together fourteen songs which, in these days of patriotic outbursts, should prove very popular. Nearly all are in use in the garrison schools of the British Army throughout the world. They have stood the test of trial in schools, and will, we should think, become largely used.

LONDON MATRICULATION, JUNE, 1900.

Monthly Test Papers. No. 5.

THE last of a series of five test papers covering the syllabuses of all the compulsory subjects of the London University Matriculation Examination, together with test papers in French, is published this month. Copies of any of the papers can be obtained in a form suitable for distribution in class. The reprinted papers are sold in packets of twenty-five at a cost of 6d. net for each subject. The papers may be ordered through a bookseller, or they may be obtained (post free) from the editors of THE SCHOOL WORLD, but in the latter case all orders *must be prepaid.* Copies of the papers which have previously appeared in this series can still be obtained.

Latin Grammar and Composition.

(1) Give the gender, ablative singular, genitive plural of—ros trabs, vis, cos, aer, anceps, dos, penus, merces, paries.

(2) Decline in the singular—scelus audax, nix alba; and in the singular and plural—memor, pauper.

(3) Give the ordinal and distributive numerals corresponding to 3, 9, 16, 20, 22, 70, 200, 1,000; give the Latin for January 4th.

(4) Parse—laudarier, questus sum, paverunt, capiare, foretis; and give the principal parts of- pungo, expergiscor, fodio, patior, allicio.

(5) Construct sentences illustrating the different uses of—utrum, quin, ab, quando, in.

(6) Distinguish between—"nescit quis adest" and "nescit quis adsit"; "consulit milites" and "consulit militibus"; and translate—Caesar marries Cornelia; Terentia married Cicero; the more the merrier; non flocci facio.

(7) How do you express in Latin--Time, place, attendant circumstances, purpose?

(8) Put into oratio obliqua—Hostes ego neque vici neque vincere volui; tuum est eorum urbem expugnare.

(9) Translate into Latin:—
- (*a*) It happened that on that day Caesar sent two legions to forage.
- (*b*) I am tired of the insolence of that friend of yours.
- (*c*) There are men who think that death is the departure of the soul from the body.
- (*d*) Many shall be your trials in war until you found a city.
- (*e*) I wonder what he would do were his son to die.
- (*f*) I would have you forgive me that fault.

Latin—Cæsar.

DE BELLO GALLICO, V. Ch. 15--23.

(1) Translate:
- (*a*) Ch. XVI. Toto hoc . . . inferebat.
- (*b*) Ch. XXI. Ab his cognoscit . . . contendit.
- (*c*) Ch. XXIII. Ac sic accidit . . . perduxit.

(2) Turn the following passage from the oratio obliqua into the oratio recta (Latin).

"Pollicentur sese ei dedituros atque imperata facturos; petunt ut Mandubracium ab iniuria Cassivellauni defendat atque in civitatem mittat qui praesit imperiumque obtineat."

(3) Translate and explain the construction of words in italics-
Caesar, cum constituisset hiemare in continenti neque multum *aetatis* superesset atque it facile extrahi posse *intelligeret*, obsides imperat et quid in annos singulos *vectigalis* populo Romano Britannia *penderet* constituit.

(4) Write all you know about Cassivelaunus.

(5) Give, in your own words, as clear an account as you can of both of Caesar's campaigns in Britain.

(6) Translate:

Tempore ruricolae patiens fit taurus aratri
Praebet et incurvo colla premenda iugo;
Tempore paret equus lentis animosus habenis
Et placido duros accipit ore lupos;
Tempore Poenorum compescitur ira leonum,
Nec feritas animo, quae fuit ante, manet,
Quaeque sui monitis obtemperat Inda magistri
Belua, servitium tempore victa subit.

English Language.

REVISIONAL.

A.—*Language.*

(*Not more than* **seven** *questions to be attempted.*)

(1) "The connection between form and meaning in grammar is often imperfect" (Skeat). Illustrate this statement.

(2) Give, in chronological order, the causes of our present imperfect orthography.

(3) Enumerate the sources of our language. In what respects are the following dates important—597, 1066, 1258, 1362, 1477, 1611, 1623.

(4) Annotate—*vixen*, *aught*, *ywis*, *bridegroom*, *his*, *clomb*, *each*, *phantom*, *such*, *nickname*.

(5) Trace the history of the word *self.*

(6) What are *doublets*? How have they arisen?

(7) Account for the formation of the following verbs—*could*, *are*, *ought*, *wot*, *taught*. What are Prepositional Verbs?

(8) Distinguish between Primary and Secondary Derivatives. What functions has the suffix *en*?

(9) What is the history of the Gerundial Infinitive?

(10) Analyse-—"I shall believe in it when the Dorimants in humbler life, who would be thought in their way notable adepts in this refinement, shall act upon it in places where they are not known, or think themselves not observed."

B. - *Literature and Composition.*

(*Not more than* **three** *questions to be answered.*)

(1) What do you know of any two of the following authors?--Chaucer, Bacon, Milton, Wordsworth, Tennyson.

(2) Give a brief account of any two of the following works—Waverley, The Excursion, Pickwick Papers, The Vicar of Wakefield, The Holy War, The Canterbury Tales.

(3) Where are the following quotations to be found:—
- (*a*) Oh for the touch of a vanished hand
  And the sound of a voice that is still.
- (*b*) God made the country and man made the town.
- (*c*) For the soul is dead that slumbers.
- (*d*) She sate like Patience on a monument.
- (*e*) All the world's a stage.

(4) Quote any sonnet you have learnt, and explain its structure.

(5) Define—Metaphor, Simile, Rhythm, Trochee, Assonance, Epic.

English History.

(GENERAL.)

Not more than **eight** *questions to be attempted, of which one must be either Q. 11 or Q. 12.*

(1) Show the causes—geographical or otherwise—of the economic and political preponderance of southern and eastern England before the eighteenth century.

(2) Illustrate the various origins of English towns.

(3) Summarise the history of the conquest of Ireland, from Strongbow's invasion to the plantation of Ulster.

(4) Give a summary of the development of Parliament in regard to (i.) representation, (ii.) legislative power.

(5) Describe the composition of the Court of Star Chamber in the reign (*a*) of Henry VII., and (*b*) of Charles I.

(6) Write brief notices of any *eight* of the following, selecting *two* from each group :—

(*a*) *Persons.* Black Prince, Stephen Langton, Strafford, Warwick the King-Maker, Wyclif.

(*b*) *Terms.* Ceorl, Craft-gild, Ealdorman, Eorl, Fief, Fyrd, Gesith, Merchant-gild, Hanse-town, Mortmain, Relief, Tallage, Weregild.

(*c*) *Ecclesiastical Proceedings.* Conventicle Act, De Haeretico Comburendo, Hampton Court Conference, Six Articles, Statute of Provisors.

(*d*) *Civil Proceedings.* Assize of Clarendon, Provisions of Oxford, Statute of Labourers, Statute of Liveries, Treaty of Newport, Triple Alliance.

(7) When were England and France leagued together in the sixteenth and seventeenth centuries, and against what enemies?

(8) Sketch the growth of the British Navy before 1700.

(9) On what charges were (*a*) John Tiptoft, Earl of Worcester, (*b*) Sir Thomas More, (*c*) Charles I., (*d*) Sidney, condemned?

(10) Write down in three parallel columns :—

(*a*) *Any ten* of the subjoined place names.

(*b*) Any historical events in your period associated therewith, adding dates if possible.

(*c*) A brief description of their position.

Bannockburn.
Beachy Head.
Bosworth.
Boyne.
Canterbury.
Chalgrove.
Chester.
Cropredy Bridge.
Drogheda.
Evesham.
Fotheringay.
Glastonbury.
Hastings.
Lewes.
Limerick.
Lincoln.
Mortimer's Cross.
Newbury.
Naseby.
Nottingham.
Poitiers.
Pontefract.
Rochester.
Sedgemoor.
Shrewsbury.
Sluys.
Stamford Bridge
Towton.
Worcester.
Zutphen.

(11) Give brief particulars, with dates and map, of the English colonies founded in America down to 1700.

(12) What parts of the British isles are still occupied by people mainly of Celtic race? Illustrate your answer by a sketch map.

Arithmetic and Algebra.

(This paper includes the whole of the work set for the Examination.)

(1) A cubic centimetre of copper weighs 8·85 grammes, a cubic centimetre of tin, 7·29 grammes, and a cubic centimetre of zinc, 6·86 grammes; find the weight of a penny in grammes (correct to two decimal places) having given that the alloy used for coinage in this country consists of 95 per cent. of copper, 4 per cent. of tin and 1 per cent of zinc, and the volume of a penny is 1·06 cubic centimetres.

(2) (i.) A man borrows £2 and has to pay 1s. a month for the use of it until returned; at what rate per cent per annum, Simple Interest, is the money lent?

(ii.) A milkman takes two samples of milk, one containing 25 per cent., and the other, 40 per cent., of water, and mixes them in the proportion of 2 to 1; what is his profit per cent. if he sells the mixture at the same price as he gave for the pure milk?

(3) A merchant starts a business with a capital of £600; at the end of a certain period he is joined by a second who contributes £400, and later on these two are joined by a third who contributes £900; if the profits at the end of the year be divided proportionately and that proportion be 4 : 2 : 3, when did the two men enter the business?

(4) Simplify :—

$$\text{(i)}\ \frac{x-\frac{1}{x}}{x+\frac{1}{x}}\times\frac{x^2-\frac{1}{x^2}}{x^2+\frac{1}{x^2}}\div\frac{\left(x-\frac{1}{x}\right)^2}{x^4-\frac{1}{x^4}}$$

$$\text{(ii.)}\ \frac{c(a+b)}{(c-a)(c-b)}+\frac{a(b+c)}{(a-b)(a-c)}+\frac{b(c+a)}{(b-c)(b-a)}.$$

Show that the difference of the squares of the sum and difference of any number and its reciprocal is always the same whatever the number may be.

(5) Solve the equations :—

$$\text{(i.)}\ px-qy=qx-py=1\,;$$

$$\text{(ii.)}\ \frac{3}{x+11}-\frac{2}{x-3}=\frac{5}{4}.$$

(6) Find the Highest Common Factor of

$$x^3-10x^2-17x+66 \text{ and } x^4-14x^3+31x^2+28a-66.$$

(7) (i.) The sum of three numbers is 14; twice the second is less than the sum of the first and third by 2, and three-fourths of the first is equal to the third increased by 4; find the numbers.

(ii.) The number of square yards in the area of a square plot of grass is greater than the number of yards in its perimeter by 45; find the length of a side of the plot.

(8) Find the value of

$$\frac{4\sqrt{2}-3\sqrt{3}}{7-2\sqrt{6}}\times\frac{2\sqrt{2}+\sqrt{3}}{2\sqrt{2}-7}$$

and solve the equation $2\sqrt{x+5}-\sqrt{x}=4$.

(9) (i.) The first term of an Arithmetical Progression is a and the fourth term is $\frac{3a}{4}$; find the sum of n terms of the series, and show also that the sum of 15 terms is the same as the sum of 10 terms.

(ii.) Sum to $2n$ terms, and to infinity, the series $5-2\frac{1}{2}+1\frac{1}{4}-\frac{5}{8}+\ldots\ldots$

(10) Find three numbers in Geometrical Progession such that twice the sum of the first and last equals five times the second and the sum of their squares equals 84.

Answers.

(1) 9·29 grammes. (2) (i.) 30 %; (ii.) $42\frac{6}{7}$ %.

(3) 3 months and 6 months after the first.

(4) (i.) $\frac{x^2+1}{x^2-1}$; (ii.) -1. (5) (i.) $x=\frac{1}{p+q}$, $y=-\frac{1}{p+q}$;

(ii.) 1 or $-8\frac{1}{5}$. (6) $x-11$. (7) (i.) 8, 4, 2;

(ii.) 9 yards. (8) $2\sqrt{2}+7$; $x=4$ or $\frac{4}{9}$.

(9) (i.) $\frac{n(25-n)a}{24}$; (ii.) $\frac{10}{3}\left(1-\frac{1}{2^{2n}}\right)$; $\frac{10}{3}$. (10) 2, 4 and 8.

Geometry.

(Euclid. Books I.—IV.)

(1) Any two sides of a triangle are together greater than the third side.

Of all the triangles of a given area described on the same base, the isosceles triangle has the least perimeter.

(2) Equal triangles on the same base and on the same side of it are between the same parallels.

Bisect a triangle by a straight line drawn through any point in one of its sides.

(3) If two triangles have all the angles of the one equal to all the angles of the other, each to each, and a side of the one parallel to a side of the other, these sides being opposite to a pair of equal angles, then shall the remaining sides, produced if necessary, form a parallelogram.

(4) If a straight line be divided equally and unequally the sum of the squares on the unequal parts is equal to twice the sum of the squares on half the line and on the line between the points of section.

Also, state this theorem in an algebraical form.

(5) ABC is a triangle and D is the middle point of BC; if AD be joined show that the squares described on BA and AC are together equal to twice the sum of the squares on AD and BD.

(6) In equal circles the angles, whether at the centres or the circumferences which stand on equal arcs shall be equal.

ABCDEF is a regular hexagon inscribed in a circle and P any point on the arc AB; show that the angle APF is equal to a sixth part of two right angles.

(7) Show that the tangents drawn from any point on the common chord produced of two circles which intersect are equal.

If two such points be taken in the common chord produced and the four tangents be drawn to the two circles, show that the quadrilateral as formed has the sum of two of its sides equal to the sum of the other two.

(8) Describe a circle of given radius to touch a given circle and a given straight line.

Discuss all the possible solutions of the poblem (i.) when the given straight line cuts the circle and (ii.) when the given straight line does *not* cut the circle.

(9) Describe an isosceles triangle having each of the angles at the base double the third angle.

(10) Circumscribe a circle about a given regular pentagon, and thence show how to circumscribe a circle about any given regular polygon.

General Elementary Science.

PHYSICAL QUESTIONS.

(1) An upright post is fixed at the bottom of a pond which is three feet deep; the top of the post is three feet above the water. How will the post appear to an eye about the level of the top of the post and four or five feet away from it? Draw a figure to illustrate your answer. What will be seen as the eye moves further and further back from the post?

(2) Describe fully Grove's Voltaic Cell. Explain the uses of the liquids employed.

(3) Explain in detail what happens when an electric current is passed through a solution of blue vitriol (copper sulphate). In what industry is this experiment utilised?

(4) Describe some simple instrument for detecting the presence of electric currents by their action upon a magnetic needle.

(5) Explain the terms—"Conservation of Energy," "Indestructibility of matter," "Barometric Pressure," "Refrangibility" and "Radiation."

CHEMICAL QUESTIONS.

(1) State the composition and principal properties of ammonia. What happens when it is mixed (*a*) with water, (*b*) with nitric acid?

(2) Mention six natural forms of carbonate of lime. What is the action of rain water upon them? How does this explain the formation of the caverns of Derbyshire?

(3) Define "acids," "bases," and "salts." Given some caustic soda and sulphuric acid, what experiments would you perform to demonstrate the chief properties of each of them?

French.

I. Translate the following passage:

L'Europe oubliait deux choses: d'abord que si les Etats-Unis n'ont derrière eux qu'un bref passé historique, il n'en résulte pas l'absence d'un passé social. La guerre d'Indépendance, qui d'une nation en fit deux, ne détruisit pas l'unité de la race. Les annales anglo-saxonnes appartient aux Américains aussi bien qu'aux Anglais. Ils y puisent volontairement après y avoir puisé inconsciemment. En second lieu, le diapason scientifique dont nous nous servons de ce côté-ci de l'Atlantique ne saurait nous fournir un instrument certain d'analyse quand il s'agit de déterminer la nature et l'intensité de vibrations qui ont pris naissance si loin de nous. Il est bien possible qu'en Europe une université ne puisse exercer d'influence si elle n'atteint pas telle moyenne de savoir, et qu'en Amérique une université restée très en deçà de cette moyenne en exerce une énorme.

II. Translate into French:

The Bishop of X—— was much beloved by his people. One day, to show their appreciation of his goodness, they determined to present him with a mitre and a crosier. "Thank you, my friends," said the Bishop to them on receiving their gift, "but a new hat and an alpaca umbrella would have been more useful."

III.

(1) Give the feminine of—*Italien*, *long*, *menteur*, *vrai*, *épais*, and the singular of *les neveux*, *vos jeux*, *nous fûmes* and *ces âmes*.

(2) Distinguish between *aveuglément* and *aveuglement*, *plus tôt* and *plutôt*, *consumer* and *consommer*, *quelques hommes* and *des hommes*.

(3) Write a few sentences to illustrate the difference between the meaning and use of *l'un l'autre* and *l'un et l'autre*, *quelque* and *quel que*, *quoique* and *quoi que*, *tant* and *autant*.

(4) Give the first person singular of the future of *acquérir* and *accueillir*; the second person plural of the pluperfect indicative of *s'asseoir* and *naître*; and the present and past participles of *rire* and *tenir*.

(5) When are verbs of declaring, believing and knowing followed by the indicative and subjunctive moods respectively?

JUNIOR OXFORD LOCAL EXAMINATION, JULY, 1900.

Monthly Test Papers, No. 5.

SIX test papers in the ten most popular subjects for the Junior Oxford Local Examination in July, 1900, have been specially prepared for us by teachers with a large experience of the requirements of the examinations. The fifth of the series is given below. Copies of the papers in any of the subjects can be obtained in a form suitable for distribution in class. The reprinted papers are sold in packets of twenty-five, at a cost of 6d. net. The papers may be ordered through a bookseller, or they may be obtained (post free) from the editors of THE SCHOOL WORLD, but in the latter case all orders *must be prepaid*. Copies of the papers which have appeared in the January, February, March and April numbers of this year can still be obtained.

Arithmetic.

(Including Stocks and Shares.)

(1) Simplify:—

(i.) $14\frac{1}{6} - (2\frac{1}{5} + 1\frac{4}{15}) \div 5\frac{1}{5}$;

(ii.) ·0010925 ÷ ·025.

(2) Convert ·9̇9̇0 into a vulgar fraction in its lowest terms.

(3) Add together $\frac{4}{5}$ of 7 half-sovereigns, $\frac{4}{7}$ of 5 guineas and $\frac{5}{7}$ of 2s. 4d.

(4) What decimal of £5 is £2 17s. $7\frac{1}{2}$d.?

(5) How many times is 1 sq. po., 28 sq. yds., 5 sq. ft., 18 sq. in. contained in $1\frac{3}{4}$ acres?

(6) Find, by Practice, the wages of seven men for 2 years 14 weeks $4\frac{1}{2}$ days at £78 a year each.

(7) If 15 men can do a piece of work in 15 days, how long will it take 18 men to do half the work?

(8) Find the square root of 2·2̇ to four places of decimals.

(9) In what time will £450 amount to £508 10s. at the rate of 4 per cent. per annum Simple Interest?

(10) The internal measurements of a rectangular tank are, length 16 ft., breadth 8 ft., depth 6 ft.; what is the depth of the water in the tank when it weighs $12\frac{1}{2}$ tons, 1 cubic foot of water weighing 1,000 oz.?

(11) The Compound Interest on a certain sum of money for 2 years at $7\frac{1}{2}$ per cent. per annum exceeds the Simple Interest by £16 17s. 6d.; find the sum of money.

(12) A man invests £589 in $3\frac{1}{2}$ per cent. India Stock at $108\frac{1}{2}$; what is his annual income and what per cent. does he get in return for his outlay?

Is this a better investment than in 3 per cent. Egyptian Stock at $101\frac{1}{4}$?

Answers.

(1) (i.) $13\frac{1}{2}$; (ii.) ·0437. (2) $\frac{110}{111}$. (3) £5 17s. 8d.
(4) ·57625. (5) 144. (6) £1,245 15s. (7) $6\frac{1}{4}$ days.
(8) 1·4907. (9) $3\frac{1}{4}$ years. (10) $3\frac{1}{2}$ feet. (11) £3,000.
(12) £19; $3\frac{7}{31}$ %; yes.

Old Testament—Genesis.

(1) State the main lessons to be drawn from the character of Joseph.

(2) In what way did dreams influence the fate of Joseph? How are we to account for this?

(3) Discuss the conduct of Joseph towards his brethren in Egypt.

(4) "A man in whom the Spirit of God is." State the connection of these words, and explain them.

(5) Give a short account of the history and circumstances of Egypt so far as Joseph was concerned.

(6) What Eastern customs are illustrated in Jacob's final interview with his brethren?

(7) "All my glory in Egypt." Explain this. Also compare the characters of Reuben and Judah.

New Testament—St. Luke.

(1) "The servant which knew his lord's will." To whom does that refer, and what punishment was to fall upon him? How does Jesus deal with the guilt of the heathen?

(2) Why did Jesus reproach men with blindness? What signs of the times should have awakened them?

(3) Explain in detail the parable of the Great Supper, and state the lessons it is designed to teach.

(4) Give as many instances as you can recall from this gospel of Christ's demand for absolute self-sacrifice in his disciple.

(5) Explain the answer of Jesus to those who showed him the penny with Cæsar's superscription upon it.

(6) "He is not the God of the dead." State the connection of these words, and express the argument in which they occur.

(7) On what occasions did Jesus come into conflict with the Sadducees? Give a short account of their party history.

English Grammar.

ANALYSIS AND WORD FORMATION.

(1) Explain– Complement, Retained Object, Prepositional Verbs.

(2) Give examples of the various kinds of Subjects.

(3) Analyse—(*a*) We made the ground smooth; (*b*) We found the ground smooth; (*c*) Thus done thetales, to bed they creep.

(*d*) Is't possible that my deserts to you
Can lack persuasion? Do not tempt my misery,
Lest that it make me so unsound a man
As to upbraid you with those kindnesses
That I have done for you.

(4) How are diminutives formed? Give examples.

(5) Explain the force of the prefixes in withhold, avert, educate, mistake; and of the suffixes in—piecemeal, lowly, manifold, glorify.

(6) What is the meaning of each of the following—*rescript*, *appanage*, *spontaneity*, *hyperbolical*, *allegory*.

(7) Subjects for Essays:–

(*a*) Figures of Speech.
(*b*) Glass manufacture.

English History.

(SPECIAL PERIOD, (*a*) 1327-1347.)

Not more than five questions to be attempted.

(1) Give an account of the rule and overthrow of Mortimer during the minority of Edward III.

(2) Explain Edward III.'s claims to the French crown and show how he set about making good those claims.

(3) Mention some of the ways in which Edward III. obtained money for his wars in France. Show how the French war contributed to the growth of the power of Parliament.

(4) Describe *either* (*a*) the campaign, *or* (*b*) the battle of Cressy. Illustrate your answer, if possible, by a sketch map.

(5) Edward III. sometimes entitled himself "King of the Seas." Explain this, and show what steps he took to assert his sovereignty.

(6) Contrast the characters of Edward III. and Edward I.

As You Like It.

1) What is blank verse? Give some examples of Shakespeare's licence in the use of it, and of words accented otherwise than they now are.

(2) In what unusual senses are the following words employed:—taxation, humorous, argument, brawls, practices, character?

(3) Comment on the grammar of—

You were better speak first.
If this be so, why blame you me to love you?
It was upon this fashion bequeathed me by will but poor a thousand crowns, and, as thou sayest, charged my brother, on his blessing, to breed me well.

(4) What is a masque? Describe the one which occurs in this play? Do you know of another masque occurring in Shakespeare?

(5) Why was the elder Duke expelled? Point out any traits in his character which might suggest that he was unfitted for ruling.

Geography.

ITALY.

(1) Draw a sketch-map of Italy, and insert the following:—(1) The chief rivers; (2) the towns, Genoa, Naples, Venice, Brindisi, Civita Vecchia, Ancona, Spezia; (3) the Alps and Appenines; (4) the 40th parallel of latitude.

(2) What are the chief articles of commerce between Italy and the British Isles?

(3) Account for the fertility of Northern Italy. What do you know of the mineral productions of this country?

(4) Name the various Alpine passes into Italy. How are the Italian railways connected with those of the neighbouring countries?

(5) What is there of importance or interest connected with Pompeii, Brindisi, Venice, Florence, Bologna, Pisa, San Marino, Carrara? Name the colonies of Italy.

(6) Where and what are Elba, Stromboli, Lipari, Etna, Garda, the Vatican, Via Appia?

French.

(1) Translate into French:—

(*a*) Put some coal on the fire. It is cold in this room.
(*b*) Those horses are the finest in the town. Look at them.
(*c*) If you do not like those pictures, give them to us.
(*d*) What a tall man! He must be over six feet.
(*e*) He who does not work is not often happy.
(*f*) The pens he sent me are worthless (*ne valoir rien*). Send them back to him.

(2) Translate into English:—

Mon cher ami,

. . . J'ai vu Madame Dudevant, qui se porte bien. J'ai été plusieurs fois chez M. Duris Dufresne, et il est venu quatre fois chez moi. Nous n'avons pu nous rencontrer . . . . J'ai vu M. Delatouche, qui a été fort aimable. Il me mène dimanche à l'Abbaye aux Bois, chez Madame Récamier. Delphine Gay doit y lire des vers et j'y verrai toutes les célébrités de l'époque. Je vais chez lui ce soir, fair lire mon roman, et je suis très occupée d'un article qui doit être inseré dans la *Revue de Paris*. Il m'offre en outre de rédiger pour le *Figaro*, mais je n'en veux pas. Voilà de bien belles promesses, et à quoi aboutiront-elles? Je ne sais . . .

Je suis fort enrhumée, d'ailleurs je me porte bien. Adieu . . . AURORE.

P.S. Donne-moi des nouvelles d'Agasta.

(3) Give a list of the demonstrative adjectives and the demonstrative pronouns. Put into French—This pen is better than that. He who reads these books will never read those.

(4) How are *some* and *any* expressed in French? Illustrate by translating—I have some apples. Have you any pears? He has fine white teeth. We have no oranges, but you have some. I have not any.

(5) Write in full the present indicative, conditional and imperfect subjunctive of—*faire*, *voir*, *tenir*, *s'apercevoir* and *s'asseoir*.

(6) Explain carefully the use of the present participle in French. Give four sentences to illustrate.

(7) For those only who offer "Colomba" (pp. 111-132).

(i.) Translate into English:—

(*a*) p. 120, ll. 16-25. Cependant Colomba . . . et leur guide.
(*b*) p. 128, ll. 3-14. La chambre qu'elle occupait . . . ouvrirait les yeux.
(*c*) p. 131, ll. 10-17. Ce n'est pas l'usage ici . . . elle a sa leçon faite.

(ii.) Write notes on—*verte pelouse*, *par une marche de côté*, *se faire si beau*, *en venir aux mains*, *greffier*.

(8) For those only who offer "L'homme à l'orielle cassée" (pp. 139-166).

(i.) Translate into English:—

(*a*) p. 145, ll. 10-21. Après avoir accompli . . . manutention des vivres.
(*b*) p. 150, ll. 3-14. Il était gros . . . n'en était pas moins doux.
(*c*) p. 161, ll. 12-18. Fougas leur déduisit . . . . ses justes réclamations.

(ii.) Write notes on—*à la demi-solde*, *entrefilet*, *embarras de voitures*, *mis sur la paille*, *moyennant*.

Algebra.

(Including Arithmetical, Geometrical and Harmonical Progressions.)

(1) Multiply $\frac{x}{4}-\frac{y}{6}-\frac{z}{3}$ by $\frac{x}{3}-\frac{y}{2}+z$.

(2) If A divides B and C it will also divide $b\text{B} \pm c\text{C}$.
Find the highest common factor of
$x^4-2x^3y-4xy^3-4y^4$ and $x^4+x^3y+3x^2y^2+2xy^3+2y^4$.

(3) Simplify:–

(i.) $\frac{x+5}{x+2}-\frac{6}{x}+\frac{x+1}{x-2}$

(ii.) $\frac{c+a}{(b-c)(b-a)}+\frac{a+b}{(c-a)(c-b)}+\frac{b+c}{(a-b)(a-c)}$.

(4) Solve the equations:—

(i.) $\frac{x-a}{\text{[illegible]}}-\frac{b+x}{\text{[illegible]}}=\frac{(a-b)x}{ab}-\frac{a}{\text{[illegible]}}-\frac{b}{\text{[illegible]}}$;

(ii.) $\frac{y}{\text{[illegible]}}-\frac{x}{\text{[illegible]}}=2 \qquad \frac{x}{4}-\frac{17y}{16}=-5$;

(iii.) $\frac{4}{x+3}-5=\frac{18}{x^2-9}+\frac{3}{3-x}$.

(5) What are the two numbers the sum of whose squares is equal to 26 and whose product is 5?

(6) Extract the square root of

$$x^4+x^2\left(a^2+\frac{2}{a}\right)+2x(ax^2+1)+\frac{1}{a^2}.$$

(7) Prove that $(a^m)^n = a^{mn}$ when m and n are positive integers.

Simplify: $\frac{\sqrt{2}(1-\sqrt{3})}{2\sqrt{3}-1}-\frac{\sqrt{3}(1-\sqrt{2})}{2\sqrt{3}+1}$.

Solve the equation:— $\sqrt{x^2-3x+6}+\sqrt{x^2-3x+3}=3$.

(8) Sum the series:—

(i.) $1{\cdot}2+2{\cdot}7+4{\cdot}2+5{\cdot}7+\ldots$ to 20 terms;

(ii.) $9-3+1-\frac{1}{3}+\ldots$ to six terms and to infinity.

Write down the ninth term of each series.

(9) Find the sum of n terms of the series

$$(a-b)+\left(3a-\frac{b^2}{3}\right)+\left(5a-\frac{b^3}{9}\right)+\ldots$$

Insert four harmonic means between $\frac{1}{2}$ and $1\frac{1}{3}$.

(10) Find the condition that the roots of the equation $px^2+qx+r=0$ may be (i.) equal and of the same sign, (ii.) equal and of opposite signs.

Form the equation whose roots are $\frac{a}{a-b}$ and $\frac{b}{b+a}$.

Answers.

(1) $\frac{x^2}{12}-\frac{13xy}{72}+\frac{5xz}{36}+\frac{y^2}{12}-\frac{z^2}{3}$. (2) x^2+2y^2.

(3) (i.) $\frac{2(x^3-4x+12)}{x(x^2-4)}$; (ii.) 0. (4) (i.) $\frac{a-b}{2}$;

(ii.) $x=-3, y=4$; (iii.) 3 or $-1\frac{3}{5}$. (5) 5 and 1.

(6) $x^2+ax+\frac{1}{a}$. (7) $\frac{1}{11}(\sqrt{2}+\sqrt{3}-6)$; $x=1$ or 2.

(8) (i.) 309; (ii.) $6\frac{20}{27}$; $6\frac{3}{4}$, 13·2, $\frac{1}{729}$.

(9) $ax^2-\frac{3b}{b-3}\left[\left(\frac{b}{3}\right)^n-1\right]$; $\frac{4}{7}, \frac{2}{3}, \frac{4}{5}, 1$.

(10) (i.) $q^2=4pr$; (ii.) $q=0$; $(a^2-b^2)x^2-(a^2+2ab-b^2)x+ab=0$.

Euclid.

Books I.—IV.

(1) Define a line, a plane angle, a segment of a circle and a scalene triangle.

(2) Draw a straight line perpendicular to a given straight line of unlimited length, from a given point without it.

(3) If a straight line fall across two parallel straight lines it shall make the alternate angles equal, and the exterior angle equal to the interior opposite angle on the same side, and also the two interior angles on the same side together equal to two right angles.

(4) To a given straight line apply a parallelogram which shall be equal to a given triangle and have one of its angles equal to a given angle.

(5) Divide a given straight line into two parts so that the rectangle contained by the whole line and one of the parts may be equal to the square on the other part.

(6) The opposite angles of a quadrilateral inscribed in a circle are together equal to two right angles.

Or—If two angles of a triangle be equal to one another, then the sides which are opposite to the equal angles shall be equal to one another.

(7) Inscribe a square in a given circle.

Or—If a parallelogram and a triangle be on the same base and between the same parallels, the parallelogram shall be double of the triangle.

(8) Inscribe a regular hexagon in a given circle.

Or—If a straight line is divided into any two parts, the rectangle contained by the whole and one of the parts is equal to the square on that part together with the rectangle contained by the two parts.

(9) ABCD is a rhombus and E, F are the middle points of BC, CD; show that the triangle AEF is isosceles.

(10) Construct a rectangle that shall be equal to one-third of a given triangle.

(11) Any point D is taken in the base BC of an isosceles triangle ABC and AD is joined; show that the circles described about the triangles ABD, ACD are equal, and that if these circles meet CA and BA produced in E and F respectively the sum of ED and FD is equal to BC.

(12) ABC is an equilateral triangle and through the angular points A, B, C, straight lines EAF, FBD, DCE are drawn at right angles to CA, AB, BC respectively; show that the circle circumscribing the triangle ABC trisects the sides EF, FD, DE of the triangle EFD.

PRELIMINARY OXFORD LOCAL EXAMINATION, JULY, 1900.

Monthly Test Papers.—No. 5.

The increasing importance of the Preliminary Local Examinations of both Oxford and Cambridge has made it necessary to take into account the work of the teachers engaged in preparing pupils for these examinations. We have, consequently, had six test papers in each of the seven most important subjects drawn up by experienced teachers, and the fifth is printed this month. Copies of the questions in any subject dealt with can be obtained in a form suitable for distribution in class. Particulars will be found on page 194, in connection with the Junior Local Examination.

Arithmetic.

(1) A cargo contains 1,413,700 boxes, and each box four hundred and thirty two packages; how many packages are there in the cargo?

(2) Divide 9 lbs. 7 oz. 10 dwts. 20 grs. by 47.

(3) Reduce 417,365 farthings to £ s. d.

(4) Simplify $\frac{2}{3}-\frac{3}{5}+\frac{5}{9}-\frac{4}{15}$.

(5) To the product of $3\frac{1}{11}$ and $4\frac{1}{8}$ add the quotient of $5\frac{1}{16}$ by $4\frac{1}{2}$.

(6) Divide the difference between 3·14125 and 2·681 by ·035.

(7) Find the cost of laying 5 miles 3 fur. of tramway at £2,762 10s. per mile.

(8) What will £615 amount to in $7\frac{1}{2}$ years at 4 per cent. per annum Simple Interest?

Answers.

(1) 610,718,400. (2) 2 oz. 9 dwts 4 grs.

(3) £434 15s. $1\frac{1}{4}$d. (4) $\frac{16}{45}$. (5) $13\frac{7}{8}$. (6) 13·15.

(7) £14,848 8s. 9d. (8) £799 10s.

New Testament—St. Luke.

(1) Give any instances in which Jesus showed his respect for the Law of Moses.

(2) What did Jesus teach about the Day of Judgment?

(3) Relate in your own words the parable of the Pharisee and the Publican. What lessons was it meant to teach?

(4) What are the chief differences between the parable of the Pounds and the parable of the Talents?

(5) How was the prediction of the destruction of Jerusalem fulfilled?

(6) Give the context and explain—

"A mouth and wisdom."

"Chief among the publicans."

"Easier for a camel to go through the eye of a needle."

"One of the days of the Son of Man."

And compare "an hundred measures of oil" with "an hundred measures of wheat."

English History.

(1685-1697.)

Not more than five questions to be attempted. Credit will be given for maps or other drawings to illustrate the answers; but not more than one-fifth of the time allotted to the paper should be devoted to such illustrations.

(1) Contrast James II. and Charles II. Explain why James II. became unpopular in some parts of the British Isles while he remained popular in other parts.

(2) Give an account of the Revolution of 1688 as regards *either* England *or* Scotland *or* Ireland.

(3) Write a life of *either* Queen Mary II., *or* "Bonnie Dundee," *or* Patrick Sarsfield.

(4) Who was William of Orange? Where is Orange? Why was William chosen to lead the armed resistance to James II. and ultimately to take his place? What were the leading aims of his policy?

(5) State briefly the objects of the *Declaration of Indulgence*, the *Bill of Rights*, and the *Toleration Act*.

(6) Write down in three columns:—
(*a*) The ten following place-names.
(*b*) Where the places are.
(*c*) What events took place there during this period.
Beachy Head, *The Boyne*, *Glencoe*, *Killiecrankie*, *La Hogue*, *Limerick*, *Londonderry*, *Ryswick*, *Sedgemoor*, *Steinkirk*.

English Grammar.

PARSING.

(1) Parse fully—"Even Frenchmen who have stayed in England for several years lose the purity of their accent."

(2) Show how the word "that" may belong to several parts of speech.

(3) Construct sentences as follows:—
(*a*) Verb, two nouns, pronoun.
(*b*) Verb, two nouns, preposition, two adjectives.
(*c*) Verb, two adjectives, pronoun, noun, adverb.

(4) Decline these words—fox, man, she.

(5) Paraphrase:—

Thanks, Brian, for thy zeal and care!
Good is thine augury, and fair.
Clan-Alpine ne'er in battle stood,
But first our broadswords tasted blood.
A surer victim still I know,
Self-offered to the auspicious blow:
A spy has sought my land this morn—
No eve shall witness his return!

Robinson Crusoe.

(1) What has De Foe to say on the value of presentiments?

(2) Describe the habits of the savages with whom Crusoe comes in contact while on the island.

(3) Give the most striking instances of Crusoe's ingenuity.

(4) What was the disposition made of Crusoe's property in Brazil, when it was believed that he was dead? How did he recover it?

(5) Explain the meaning of—
Notary: affidavit; buskins, savanna; casuist; scuttle, ingenio; disbursement; baize; inured; gudgeons; hawser; procuration; perspective-glass; prudential.

Geography.

ITALY.

(1) Draw a map of Italy, inserting the following—Naples, Rome, The Appenines, Venice, Genoa, Brindisi, The Po, and Lakes Como, Garda and Maggiore.

(2) In what parts of Italy are found—figs, olives, marble, wool, sulphur, iron, rice?

(3) What do you know of Genoa, Florence, Valetta, Brindisi, Palermo, Vesuvius?

(4) Give a short description of (*a*) Venice or (*b*) the Plain of the Po.

(5) Give an account of the mountain system of Italy.

(6) Compare the climates of England, Scotland and Italy.

French.

(*Set Book, pp.* 53 *to end.*)

(1) Translate into French:—
(*a*) The last house in that street is mine.
(*b*) My friend has two cats, but I have none at all.
(*c*) Don't go away yet. Stay and give us some music.
(*d*) I have not been to Switzerland for many years.
(*e*) This coat does not fit me. I shall have another made.

(2) What are the primitive tenses of a verb. Give the present and past participles of *avoir*, *venir*, *faire*, and *mourir*. Give the second person plural, present indicative and preterite of the same verbs.

(3) Write a list of the disjunctive pronouns, and say when they are used. Form adverbs from *faible*, *heureux*, *fou* and *bon*.

(4) Translate into English:—

Il est vrai que leurs défauts augmentèrent beaucoup avec l'âge. *La cadette* enlaidissait à vue d'œil, et *l'aînée* devenait plus stupide de jour en jour: ou elle ne *répondait* rien à ce qu'on lui *demandait*, ou elle *disait* une sottise. Elle était avec cela si maladroite, qu'elle n'eût *pu* ranger quatre porcelaines sur le bord de la cheminée sans en casser une, ni boire un verre d'eau sans en répandre la moitié sur ses habits.

(5) Give the masculine forms of *la cadette* and *l'aînée*, and write the third person plural imperfect subjunctive of each of the verbs in italics.

(6) Translate into English:—
(*a*) Venons au fait, s'il vous plaît.
(*b*) Il me *ferait beau* voir, répondit la brutale, aller à la fontaine!
(*c*) Justement j'ai apporté un flacon d'argent tout exprès pour donner à boire à *madame*; j'en suis d'avis; buvez à même, si vous *voulez*.

What is the infinitive form of *ferait* and the imperative of *voulez*?

Give the feminine of *beau* and the masculine of *madame*.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

A Private Examiners' Association—A Suggestion.

YOU are aware that many secondary schools in this country do not avail themselves of the examinations conducted by the various public examining boards, but—often for financial reasons—prefer to entrust their annual external examination to a single examiner or group of examiners. In such cases the fee offered by the governors or the proprietors of a school is frequently inclusive of all expenses—for travelling, printing, &c.

During the next three months there will probably be hundreds of men and women laboriously setting papers (often on subjects for which they have no special aptitude), and either devoting much time to reproducing these papers by some domestic copying process, or spending much money in having them printed in small quantities. Do you not think that something might be done to avoid this great waste of energy, time and money?

This seems to me a neglected variety of the educational disease known as "overlapping," and I venture to think that it could be largely remedied by the substitution of associated work for the isolated labours of individual examiners. You have done so much to help the *teacher* by your admirable series of test-papers that one naturally looks to you to do something for the equally hard-pressed and ill-paid private *examiner*. I therefore make the following suggestions:—

(1) That you should invite prospective examiners to tell you whether they would be disposed to join in any scheme of co-operation.

(2) That if the response be adequate, you should invite your

correspondents to send a clearly-made schedule of the examinations for which they are responsible. This schedule should show (if possible, on some uniform plan) the following facts:—

(*a*) The various subjects in which papers are required, and, if possible, the time allowed to each paper.

(*b*) The number and grade of the various forms for which papers are required.

(*c*) Which of these papers each correspondent is willing to set himself, and which he would prefer to have set for him.

(3) That you or your deputy should co-ordinate these schedules and assign the setting of the papers to the various examiners.

(4) That you or your deputy should submit copies of these papers to all the examiners concerned for suggestions or improvements.

(5) That the revised papers should be printed and sold to the contributors at a rate which would be quite impracticable for printed papers in small quantities, and which should none the less suffice to remunerate you for your services in organising the scheme and the examiners who have actually set papers.

(6) That your July issue should contain a list of papers thus set and printed, and an offer to supply these to schools or examiners at a specified rate. There are, I believe, many schools which—again for financial reasons—like to use papers set by external examiners, but to have the answers marked wholly or partly by their own staff. For such schools it would be no slight convenience to be able to secure duly "moderated" papers at wholesale rates.

The execution of any such scheme would, of course, necessitate asking evidence of good faith from the correspondents, and perhaps also the approximate fixing of the dates of examination on each subject.

GRAHAM STOWE.

Oxford.

[The suggestion seems to us a good one, but not quite so easy to carry out as our correspondent imagines. We shall, however, be pleased to receive the names of any persons who feel disposed to join in such a scheme.—EDS.]

The Training of Elementary Teachers.

EARL FORTESCUE has recently written to *The Times* on "The Training of Elementary Teachers." The main point brought out was the expense of the present training-college system, and the noble lord pointed out how much more cheaply the work might be done if carried on in connection with some of the large secondary boarding-schools. Now this argument as to cost seems to me a very weak one. If the cost of producing an efficient elementary teacher were to increase to twice its present figure, the money ought to be gratefully found by the nation, which owes an untold debt to these men. They work far too hard at college, and when they take service in the country, their college career often proves the single oasis of a hard-working life.

With your permission I should like to direct the attention of your readers to this question and to the sound principle that underlies his lordship's suggestion.

Educational work in England has been marked by two serious blots. The one has been the caste feeling between elementary and secondary teachers. The latter have very often been only too ready to carry about with them the air of "I am better than thou"; to which the former have retorted by a disparagement of the latter which was based on the small numbers dealt with in the classes of secondary schools. The second fault has been the unnecessary overlapping of various educational systems, such as technical schools, grammar schools and higher-grade schools. In several places technical schools have been unnecessarily started, where their work might well have been grafted on to the existing grammar school. It is to be hoped that one great feature of the work of the Board of Education will be co-ordination. And the training of elementary teachers is a field that lies open for the exercise of the force of combination. Wherever possible, the pupil teachers' school ought to be grafted on to an already existing secondary school. Thus the two systems will have a common junction, and the result will eventually prove very beneficial. The secondary teachers will come more into contact with elementary teachers, and learn to appreciate their good points; the elementaty teachers will be brought into a new atmosphere in the secondary school. Two points only may be noted. The *Spectator* says that one of the great problems of the future will be to spread a love of good literature among the pupils of elementary schools. Dr. Scott, in his admirable article in the *Fortnightly Review* for February, says that another problem of the future is to permeate the lower orders of schools with the public-school spirit. I venture to predict that much will be done to solve these two problems if elementary teachers receive some of their training in public secondary schools. They will receive sound literary and scientific instruction, and at the same time be members of a small *imperium in imperio*.

This suggestion has, I am sure, much more to recommend it than that for dual schools, though the latter have been blessed by an ex-master of Winchester. The utterance of this latest prophet has unconsciously linked itself in my mind with the words, "Si haec fiunt in viridi in arido quid fiet?"

SOMERSET BATEMAN.

Endowed School, Watford,
April 6th, 1900.

The Remuneration of Assistant-Masters.

THE remuneration of assistant-masters in secondary schools has long been one of the stock grievances of our profession. Perhaps the most rapid way of getting a definite idea of the actual figures is to briefly refer to some of the notices sent out by scholastic agents to fully qualified teachers seeking new posts. Glancing at a list I have before me, I find that the salaries offered to such men—graduates of Oxford, Cambridge or London for the most part—average £45 a year resident. In the majority of cases, too, the number and diversity of the subjects demanded is ludicrous. The average headmaster seems to expect to secure men with classical and mathematical attainments which would grace a fellow of a college, with athletic records worthy of a "blue," and who, in addition, are capable of teaching as "subsidiary subjects" such odd matters as drilling, carpentry, or are capable of singing in a choir or playing an organ in chapel; and this for a perfectly paltry stipend. No wonder that many headmasters are continually changing their staff.

It must be remembered, too, that the schoolmaster has to live entirely at his own expense for a quarter of the year. Take his expenditure during that period at thirty shillings a week, with an odd two pounds thrown in for travelling expenses, and it makes £20 a year to be deducted from his £45, leaving him £25 per annum with which to provide for all his personal expenses. From a pecuniary point of view, then, the schoolmaster is actually worse off than the average housemaid, and a good deal worse paid than the school cook. Yet he is expected to take the place of a gentleman in society, to be well dressed, and to provide himself with all sorts of costumes and paraphernalia necessary for taking part in sports. Then there are the numerous occasions on which he is expected to subscribe towards various funds in connection with his school. This item in my own case came to over five pounds last year.

A friend of mine, a Cambridge graduate, 25 years of age, having some three years' experience in teaching, advertised for a scholastic appointment. Among the replies which he received one was from the head of a well-known London school, who offered to allow him to assist him for three months on trial for nothing—a non-resident post. Another gentleman tried to secure his services (for full school work) for £20 a year, while a clergyman wanted him to play the organ, sing in the choir, teach shorthand, book-keeping and carpentry, in addition to the ordinary classical and mathematical subjects, for £30 a year. Surely it would not be unreasonable to try to bring about a state of things under which the salary of a thoroughly experienced, qualified graduate should be at least £60 resident. What is the opinion of your readers?

H. H. JOHNSTONE.

London.

Training College for Girls Educated in Secondary Schools.

THERE must be many among your readers interested in the movement for obtaining teachers for our public elementary schools (Girls' and Infants') from the ranks of our more highly educated women. A hostel which was opened in this place about two years ago, to provide the advantages of home life for a few girls of higher education and for "university students" wishing (*a*) to prepare themselves for the Queen's Scholarship examination, or, (*b*) having passed the examination, to attend the Diocesan Training College as day students, is as yet too little known. As a proof that the Salisbury Hostel is already doing efficient work, we are able to record that, of the four students presented at the recent Queen's Scholarship examination, two were placed in the first class, one in the second, and one in the third. There are at the present moment two or three vacancies in the hostel, and the committee are anxious to bring the institution, and the work it is intended to promote, before the notice of girls leaving school, and of their parents and guardians who may be debating what profession to choose for them. All information will be gladly given by the *Hon.* Lady Superintendent, or by myself,

MARY E. PALGRAVE,
Hon. Secretary.

The Hostel, Salisbury.

PRIZE COMPETITION.

Competition No. 11.—English Essays.

WE offer four prizes for the best English essays on one of the subjects specified below. Two prizes are open to competition by boys or girls who are sixteen years of age, on or before June 9th, 1900, and two prizes by boys or girls over sixteen years of age on the same date.

The first prize in each division will be books to the published value of half-a-guinea, and the second prize, books to the published value of five shillings. In addition, the teacher of the first-prize winner in each class may select books to the published value of half-a-guinea for distribution as prizes for essay writing among the pupils of his or her form. In each case the books must be chosen from the catalogues of Messrs. Macmillan & Co., Limited.

The rules for the competition are as follows:—

(i.) Every packet of essays sent by the teacher of a form, or separate essay sent by a private student, must be accompanied by a coupon (p. xi.)

(ii.) No essay received after Saturday, June 9th, 1900, will be examined.

(iii.) The decision of the Editors, which will be published in the July, 1900, number, to be final.

(iv.) The competitor's age must be stated on every essay, which must also be endorsed by the teacher or other responsible person, certifying it to be the unaided work of the competitor.

(v.) Replies should be addressed to the Editors, THE SCHOOL WORLD, St. Martin's Street, London, W.C.

(vi.) The essay should not exceed 500 words, and may be written on *any one* of the subjects mentioned in either of the following divisions:—

Junior Class.—For competitors under sixteen years of age:—

- The Uses of Books.
- Holiday Tasks.
- Soldiers.
- Prevention is better than Cure.
- India.
- Comparative Advantages of Town and Country Life.

Senior Class.—For competitors over sixteen years of age:—

- Polar Exploration.
- Patriotism.
- Wild Flowers.
- Knowledge is Power.
- Newspapers.
- Alfred the Great.

OUR CHESS COLUMN.

No 17.

THE following is the full answer to the end-game given for competition in March:—

A.

1.	QR—K 1 (ch.).	1.	K—Q3 or B or D.
2.	B—B4 (mate).		

B.

		1.	K—B4.
2.	Kt.—K5 (ch.).	2.	K—K3.
3.	Kt.—Kt. 6 (ch.).	3.	K—B2 or C.
4.	B—K8 (mate).		

C.

		3.	K—Q3.
4.	B—KB4 (mate).		

D.

		1.	K—B2.
2.	Kt—Kt5 (ch.).	2.	K—Kt3 or E.
3.	B—K8 (ch.).	3.	K—R3.
4.	Kt—B7 (ch.).	4.	K—R4 or F.
5.	Kt—K5 (ch.).	5.	P—Kt3 or G.
6.	R—B5 (ch.).	6.	K—R5.
7.	Kt—B3 (ch.).	7.	K—Kt5.
8.	R—KB4 (ch.).	8.	K—R4.
9.	R—R4 (mate).		

E.

		2.	K—B1.
3.	R—K8 (mate).		

F.

		4.	K—Kt3
5.	Kt—K5 (mate).		

G.

		5.	K—R5.
6.	R—B4 (ch.).	6.	K—Kt4.
7.	P—R4 (ch.).	7.	K—R3.
8.	Kt—Kt4. or RxP (mate).		

I think competitors will agree with me that this is an exceedingly fine end-game, well worth the time and trouble necessary for its unravelling. Prize-winners and present score will be found below. Ten marks have been assigned to the above solution. I shall be glad to hear what our prize-winners think of the "Six Lessons" awarded to them.

By the time this appears the chess season proper will have been finished. The past season has been one of exceptional activity in school chess circles, and it is to be hoped that this is a happy augury of the future. The following have had chess fixtures or correspondence matches: Manchester Grammar School; Merchant Taylors'; Cheltenham College; Trowbridge High School; Harrogate New College; Nonconformist Grammar School, Bishop's Stortford; Friends' School, Saffron Walden; Taunton School; King Edward's High School, Birmingham, and Tettenhall College. Manchester, Trowbridge, and Merchant Taylors' are now competing for The School World Championship. The games, if not previously finished, are to be adjudicated at the end of the summer term. A new Correspondence Tourney will then be commenced, of which I will give particulars in an early number.

This month's game:—

	WHITE.	BLACK.
1.	P—K4.	P—K4.
2.	P—KB4.	P x P.
3.	Kt—KB3.	P—KKt4.
4	B—B4.	B—Kt2.
5.	P—KR4.	P—KR3.
6.	P—Q4.	P—Q3.
7.	Kt—B3.	P—QB3.
8.	P x P.	P x P.
9.	R x R.	B x R.
10.	Kt—K5.	P x Kt8.
11.	Q—R5.	Q—B3.
12.	P x P.	Q—Kt2.
13.	P—K6.	Kt—B3.
14.	P x P (Ch.).	K—B1.
15.	B x P.	K—K2.
16.	B—Q6 (Ch.).	K x B.
17.	P—K5 (Ch).	K x P.
18.	P Queens.	Q x Q.
19.	Q x P (Ch.).	K—Q5.

Answer these questions:

(1) At move 15 why did not Black play P x B or Kt x Q?
(2) After Black's 19th move, White mates in three. How?

The prizes will be of the usual kind.

RULES.

1.—Solutions to be sent on post cards.
2.—Give name, date, age and address. (Age limit, 21.)
3.—Solutions to be received on or before May 12th.
4.—Address:

The Chess Editor,
The School World,
St. Martin's Street,
London, W.C.

Result of April Competition.

The end-game given above has proved too much for most of our solvers. Only four obtained full marks, viz., Messrs. Dick, Leonard Poyser and Russell. The prizes have been awarded to them. C. Mellows obtains six marks, F. G. M. Beck and E. H. Kettle four marks.

SCORES UP TO DATE.

Nineteen points: Messrs. Dick, Poyser, Leonard.
Fifteen points: Messrs. C. Mellows and C. F. Russell.
Thirteen points: Messrs. Beck, Kettle.
For other scores see last month.

CALENDAR.

[Items for the June Calendar must be received by May 21st, 1900.]

May, 1900.

Tuesday,	1st.	—Return forms for (*a*) London University Matriculation, June Examination; (*b*) Army Examinations, Sandhurst and Woolwich; (*c*) Permission to sit at Queen's Scholarship Examination, 1900.
Wednesday,	2nd.	—Scholarship Examination at Dover College begins.
Thursday,	3rd.	—Course of Lectures on "The Poetry of Robert Browning," by Rev. Stopford Brooke, at University College, W.C., begins. (8.30 p.m.)
Friday,	4th.	—Free Public Lectures on "Pre-historic Chronology," by Professor Montelino, at University College, W.C., begin. (4 p.m.)
Saturday,	5th.	—London Geological Field Class: Excursion to Bagshot.
Tuesday,	8th.	—Andrews Entrance Scholarship Examination begins at University College, W.C.
Wednesday,	9th.	—Scholarship Examination at Aldenham School, Elstree, begins. Practical Examinations of City and Guilds of London Technical Institute begin. Return forms for Oxford and Cambridge Higher Certificate Examination.
Thursday,	10th.	—Return forms (*a*) for Edinburgh Local Examinations; (*b*) to Local Secretaries for Oxford Local Examinations.
Saturday,	12th.	—London Geological Field Class: Excursion to Dorking.
Tuesday,	15th.	—Scholarship Examination at Bromsgrove School begins.
Wednesday,	16th.	—Return forms for Pupils' Examinations of College of Preceptors.
Friday,	18th.	—Return forms for (*a*) Matriculation Examination of University of Wales; (*b*) Oxford and Cambridge Schools Lower Certificate Examination.
Saturday,	19th.	—London Geological Field Class: Excursion to Gomshall.
Tuesday,	22nd.	—Scholarship Examination at Yorkshire College, Leeds.
Saturday,	26th.	—London Geological Field Class: Excursion to Oxted.
Monday,	24th.	—Scholarship Examination at Rugby School begins.
Wednesday,	30th.	—LL.A. Examination at St. Andrew's University begins.
Thursday,	31st.	—Bursaries Examination at Dundee University College.

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No. 18. JUNE, 1900. SIXPENCE.

MUSIC AND SECONDARY EDUCATION.

By ARTHUR H. PEPPIN, B.A.
Organist and Director of Music in Clifton College.

DURING the latter part of the nineteenth century, perhaps more than in most periods of history, circumstances have caused words to change their relative significance and even their actual meaning. One word which has of late years sprung into prominent splendour is the word "organisation." We organise everything, from shooting savages to feeding the poor, and the man who undertakes an important task without much organisation and many theories to back it is apt to be considered (in another nineteenth-century phrase) inefficient, and his efforts trivial. It is therefore my obvious duty to ask pardon in that this paper (though concerned with education, in which organisation of necessity plays so important a part) will contain but few and meagre hints as to organisation, and few ideas which will be considered worthy to be called theories.

For indeed I believe that much of the value which I claim for music as an element in a liberal education is derived from the comparative unimportance of the help which its teaching can derive from organisation. In the arrangement of most of the regular school subjects much elaboration of management and rigidity of system are necessary if you are to push boys up through a school fast enough to enable them to pass examinations and obtain scholarships. The royal roads and short cuts to learning which this pressure seems to demand, the similarity of the methods of teaching which have to be applied to boys of many varieties of taste and capacity, all these things are matters of organisation, and though valuable perhaps as discipline, yet must needs tend to check, and certainly do check, the development of originality and the acquirement of intellectual spirit and pluck.

Now, I do not intend to claim for music either that it can be an educational substitute for the classics or that its chief use should be to afford a mental gymnastic to its students, but I believe that, intelligently taught, it may be made a valuable supplement to the study of Latin and Greek, and that incidentally it does afford an intellectual training which should not be ignored.

In the first place, let us consider in what manner the study of instrumental music is likely to forward the growth of originality of mind and character. Here, I think, we shall find the gain which results from the absence of organisation. For instrumental music cannot be taught to pupils in large classes. As a general rule, a teacher can only take one pupil at a time. The result is that the teacher is bound to select the pieces to be studied, and is bound to accommodate his style of teaching for the time being with a view to the idiosyncrasies of the one mind which he is at the time trying to develop. He is able to devote all his skill and thought to applying the proper medicine to the peculiar weaknesses and ailments of the one case, and to giving freedom and scope to the growth of healthy feelings and habits of mind. This is important, but it is not all. The practice of instrumental music is concerned with the performance of compositions which have been created by others, but which the student has to learn to interpret. No composition exists which is susceptible of one interpretation and one only; it would be more correct to say that every composition which exists reveals to every mind which studies it some phases of meaning peculiar to that mind, so that two performers' conception and interpretation of one piece of music may be, actually though not obviously, as separate and individual as two poets' conception and interpretation of the same phenomenon of nature. Here, then, comes in the teacher's opportunity of exercising the pupil's individuality of mind, intellectual courage, insight, and power of weighing, choosing and rejecting — all those qualities, in fact, which are concerned with that aspect of character which we call taste. Again, a quality indispensable to the satisfactory performance of a musical work is accuracy, and it is a quality very difficult of acquirement. Moreover, inattention to it often brings, in the form of unpleasant sounds, swift and severe retribution upon all but the densest intelligences. It is certain that the accurate habit of mind which a good musical education must needs thus develop in the subtle medium of sound is bound to influence the mental growth of the student and to pave the way towards that consistency and accuracy of thought which the study of the classics and mathematics is intended directly to induce.

I shall be expected now to state some of the difficulties in the way of music study in secondary schools, and to hint at possible solutions of those difficulties.

Well, I believe that, whatever they may be, they are all referable to one overshadowing influence—the lack of artistic taste and interest in the whole community. For, as a general rule, the interests of Englishmen are confined to four subjects, some of them absolutely, and some relatively, desirable and useful. Those four subjects are religion, politics, sport and money-making. Any pursuit outside these, or outside some of them, most of our countrymen look upon as comparatively trivial. This is why parents so often consider shorthand to be a more important element in their sons' education than music, why headmasters have to fill up boys' time so completely with work and games that the pursuit of any art, even as a πάρεργον, is heavily discounted, and why boys, in some schools at any rate, take it for granted that any engagement in the gymnasium or playing-field is in the nature of things bound to take precedence of an engagement to practise the piano.

Then, again, the prevailing English attitude towards art is met by a natural re-action. A healthy growth of artistic feeling being absent, there arises a tendency to force this growth as an exotic, and so we find artistic people and teachers of music taking the extreme view in the other direction, and asserting, or implying, that their art is the most important element in education and in life. To these we have to cry, with Job, "Have pity on me, O ye friends!" because these friends often seriously damage their own cause by the use of gush, and give boys, who usually have a holy and healthy horror of gush, the impression that all musical people are cranks and "smugs." It is evidently, then, the business of a music-master to temper his enthusiasm with discretion, and by his influence, both direct and indirect, to train boys up to the normal and healthy view that art best fulfils its function when it manifests itself as the natural expression of a sound and well-regulated life and character. This, again, is an end which is not attained by organisation, but rather by personal influence — influence which perhaps is more necessary, and also more potent, in the region of art than in any other branch of education.

So much, then, for the general aspects of the subject. Let me now briefly fill in a few details.

I will begin with instrumental music, which on the whole is the most important section of a music-master's work. The chief difficulty which we encounter here is the difficulty of time. It arises partly from the high pressure in work occasioned by the tyranny of examinations, partly from the properly recognised need of out-door exercise for growing boys, and partly from a knowledge of the power which Someone possesses of finding mischief for the occupation of idle hands. Its result is that boys have to find time for the pursuit of their musical studies in the scanty hours which are not occupied either with work or regular games. Considering the heavy penalties thus attached to the study of music, the obedience which in these days parents appear generally to yield to their children, combined with the prevalence of that modern manifestation of sentimentality which prescribes that young people shall never be forced to do that which runs counter to their inclinations—considering all this, the wonder is that any young boys in a public school should learn instrumental music at all. It will perhaps be remarked here that the conditions described constitute an effective criterion for deciding which boys are musical and ought to learn, and which boys are not. To this I should reply that in most cases it is impossible to know certainly whether or no a boy is really musical until he has reached the age of sixteen or seventeen years, and that no one beginning to learn an instrument at that age can hope to attain even to a moderate measure of proficiency as a performer. So it happens that many men regret during a whole lifetime a decision made when they were twelve or thirteen years old that it was not worth their while to learn music, for having reached mature years they now know that the time and effort would have been most usefully spent. I would therefore propose that the study of music should be encouraged in young boys by allowing at least a part of the time which they must give to it to be taken from school hours. Everyone knows, of course, that this could easily be arranged without unduly interfering with their progress in more important studies.

Older boys, on the other hand, usually have rather more leisure, the suitable use of which may well be a part of their school training. To that end, I would allow them to go to their music at any times during their leisure which they might find convenient and agreeable, only insisting on the fulfilment of a definite minimum of practice, which the music-master should of course have the power of exacting.

To turn now to singing. Here, of course, is material for a whole essay: I can only give the heads. To begin with, the tenors and basses of a school choir are at an age when they ought not to be singing at all, and when, if they do sing, the unpleasantness of the voice *timbre* is in direct proportion to the zeal and energy of the singer. This condition—combined with the training of the trebles, which must needs be imperfect without the use of more time than results and circumstances would warrant—makes it impossible, as a rule, to attain to any high artistic standard of performance. The best use, therefore, that can be made of a school singing-class is to make it an opportunity of familiarising the singers themselves with standard choral works. The performances will be imperfect, but the results in developing the taste and arousing the interest of the performers in what is good will be worth the cost of any amount of trouble.

Lastly, a large and most important class of boys for whom a school music-master must provide is the class consisting of those who will never be performers, but, by the grace of Heaven, may become intelligent listeners. The art of listening to music is a difficult one, and needs much training. You may, and should, provide concerts of good music for your boys, but that alone is of little use. Make them sit still and listen to a quartet of Beethoven for the first time, and most of them will come away with the indelible impression that classical music is a thing entirely outside their ken. The net must be a wide one and must be skilfully cast. The programme should be short, and the individual numbers attractive and varied. Analytical programmes containing brief biographies and quotations from the leading themes should be printed and circulated for weeks beforehand. Boys should be encouraged to come to the music-school and have these programmes explained and the themes played over, and those who learn music should be persuaded to hammer the themes out for themselves. Everything, in fact, should be done to arouse interest in the pieces before they are listened to at the concert, because interest is the best preliminary to appreciation. The net must be wide if only a few fish are to be caught. Many missionaries have found the truth of this, and a school music-master must always be something of a missionary.

SOME MODERN EXPERIMENTS IN EDUCATION.[1]

By A. T. SIMMONS, B.Sc.

Associate of the Royal College of Science, London.

AS in the increase in thickness of exogenous trees some years are characterised by a more vigorous growth than others, so in the history of educational progress, periods of strikingly great development can be distinguished in comparison with which the preceding and following years appear unprogressive and stagnant. A closer examination reveals the fact that associated with these times of educational fertility is the name of some great teacher, whose greatness is usually to be explained by the clearness of his perception of some hitherto unrecognised truth, and the energy and persistence with which he has impressed it upon the world.

There were many schoolmasters in England in the time of Thring, of Uppingham, but unto none of them were the claims of the individual boy so clearly manifest as to Thring. Writing to Gladstone, in 1861, Thring said, "I believe I am correct in saying that no great school in England has any system or machinery established for dealing with each individual according to his powers excepting that which exists here." It was the hold which this idea had upon this pioneer that enabled him to convert an obscure country school with a handful of boys—for such Uppingham was when Thring went there in 1853—into the great public school he left behind him in 1887. But more than this, it was because he never ceased to maintain that everything must be subordinated to teaching and training each boy individually, and not as a member merely of a great corporate body, that Thring exerted the influence he did on English education and was indirectly the cause of so many improvements in the whole system of public school education.

Similar guiding principles, which have served as a great motive power, can be traced underlying the work of every great educationist, but this is not the place to elaborate a complete justification of the statement. The present purpose is to direct attention to means which are being taken in several directions to combat the growing "bookishness" of English education. If, as is generally admitted, at least theoretically, education should be a training for the duties of life, then something besides the lessons of class-room and lecture theatre is necessary. Perhaps the movement can be traced to Ruskin's experiments in road-making which he organised for his Oxford students, perhaps to the methods of Dotheboys Hall, but be this as it may, the work which is being done at Abbotsholme, Bedales, Clayesmore, and perhaps other schools, is well worthy of very careful attention from all earnest teachers who desire more to assist in the fashioning of perfect men than in the production of intellectual gymnasts who can carry off everything in the way of scholarships and university diplomas.

Whether we have in this movement, which is at least a growing one, another instance of a great step forward in the development of educational ideals is a question which cannot be yet decided. That the tendency is in the proper direction most teachers will agree, but as to what names will in future years be associated with the working out of a perfected plan must be left to posterity to decide.

In the first prospectus of Abbotsholme in Derbyshire, published in 1889, Dr. Reddie, to whom the foundation and development of the institution is due, states that "in this school an attempt will be made to develop harmoniously all the powers of the boy, to train him in fact how to *live*, and become a rational member of society." The examination of the bulky volume which has recently been published leads one to conclude that the unique character of Dr. Reddie's school is the part which manual labour takes in it. The boys are taught to do for themselves and for each other much which they are usually allowed to expect from servants. In addition to this, opportunities are given to the boys to learn on the farm lands connected with the school the rudiments of agriculture and gardening; in fact, much of the garden produce consumed by them at table is of the pupils' own growing. Muscular work of the kind involved in industrial occupations is similarly pressed into the service of the physical education of the boys. As the illustrations in the volume, to which reference has been made, show, the pupils as occasion arises, dig potatoes, build cricket pavilions and dove-cots, construct dams, fell trees, and make hay and stack it. But more than this, Dr. Reddie intends to introduce tailoring, bootmaking, and cookery.

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[1] "Abbotsholme (1889-1899), or Ten Years' Work in an Educational Laboratory." By Cecil Reddie, B.Sc.(Edin.), Ph.D.(Gottingen). xvi. + 639 pp. (George Allen.)
"Occasional Papers," Clayesmore, Enfield.
"Catalogue of Exhibits of the English Education Exhibition." (Eyre & Spottiswoode.) 1s.

In short, everything which teaches the dignity of manual labour is fostered. As can be imagined, the influence of such principles has effected a revolution in the school time-table. Not only do strange items appear in considerable profusion, such for example as, "8 a.m. Dormitory Parade," which means that at this hour the boys make their own beds, clean their teeth, &c., under the supervision of a prefect, but the day is divided in a manner calculated to make an ordinary resident schoolmaster stare. The morning is devoted to class-work indoors; the afternoon, to physical and manual work out of doors; and the evening to music, poetry, art, and social recreation.

Bedales school at Hayward's Heath is an offshoot of Abbotsholme. It was founded in 1892 by Mr. J. H. Badley, M.A., a former colleague of Dr. Reddie, and is conducted on much the same lines as the parent school, though, of course, traces of the individuality of the Headmaster are not wanting. There is the same prominence given to the part manual labour should take in education. But the fact that, though this important place in the curriculum is given to usefully employed muscular work, it is not done at the expense of school games, must be duly emphasised. Cricket and football, to say nothing of tennis and other pastimes, are made to assist in the formation of character at all three of these pioneer schools.

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HAYMAKING AT ABBOTSHOLME—THE LAST LOAD.

Mr. Badley has well expressed the objects he has in view in a chat with a *Pall Mall Gazette* interviewer, to whom he remarked, "We are, or we ought to be—'for let not him that putteth on his armour boast as he that putteth it off'—proportionately better equipped for turning out the man of affairs, action, business, every-day life, to say nothing of the colonist. A lad who can handle an axe as well as a bat, splice a broken trace, mend his own clothes like a sailor, swim a swollen ford, level a road, knock together a box or a table, graft an apple-tree; a lad who has learnt these and other things which are useful to men and not unworthy a gentleman—such a lad is obviously the ideal colonist. In a London office or chambers the things themselves are not so obviously indispensable; but the sort of resourceful and self-reliant character which they imply is nowhere a drug in the market, and the open-air feeling which they suggest is perhaps all the more valuable in a boy's experience if his after-life is destined to be spent in the hum of a town."

So, too, at Clayesmore School, near Enfield, of which Mr. Alex. Devine is the enthusiastic Headmaster, the same idea is being developed. The records of Clayesmore only extend over four or five years, it is true, but an excellent beginning has been made. There are several points of difference in the methods employed by Mr. Devine and those which distinguish the work of Abbotsholme. At Clayesmore the boys only engage in those industrial pursuits which are distinctly for their own personal benefit. For example, though they are at present constructing the rifle butts which they will themselves use, and have already erected a cricket pavilion, they are not allowed to, say, weed the gardens, or put up fences on the estate, because this would be a matter of direct advantage to the Headmaster, who is also the proprietor of the establishment. Every person who understands the working of a boy's mind will see that this is an important point. If manual labour is to be truly educative the lad must be convinced he is doing it solely for the good it will bring him. Any idea that he is being made a source of profit to his teacher is certain to detract from the moral advantages of the system. As at Abbotsholme and Bedales, the boys of Clayesmore have a great variety of occupations. At all three schools they learn to groom and ride a horse, but we believe the Middlesex school is the only one in the country where the boys are encouraged to take their dogs to school with them. The kennels of Clayesmore, Mr. Devine contends, have a great moral influence upon the school. A boy who has his dog with him cannot "loaf." His mind is continually on the alert, especially on large estates like those connected with these schools, and it is the boy with no intelligent interest in things about him who is likely to develop into a moral pest.

MANUAL WORK AT CLAYESMORE- A SQUAD GOING TO WORK.

The principle which guides Mr. Devine in the selection of suitable forms of manual labour may be stated in his own words, "We do not want our boys to be 'Children of Gideon' but to have sympathy with the 'hewers of wood and drawers of water.'"

On the benefits he has found springing from manual toil, the Headmaster of Clayesmore has written: "Habits of resource and self-reliance; completion of work begun; achievements won by patient effort over material obstacles, all have an enduring effect on the formation of character. These things are not to be won by pursuing a stereotyped course of book study, varied only by stereotyped athletic curriculum."

Such are very briefly some of the peculiarities of this experimental work in education. It would be possible to multiply examples of the tasks set the boys, but the idea has been rather to draw attention to a principle than to present a categorical account of each direction the research has taken. The principle itself cannot be too highly commended. Unfortunately, at present it is only possible for the favoured few to participate in this kind of training, for naturally schools in which the new gospel is preached are, like the great public schools, expensive, and only for the children of the comparatively wealthy. It is worth while to remark, in passing, that pioneer work in education, in this direction at least, seems to require a private school where the reformer is in no way bound by outside regulations.

But though the fundamental principle may be sound, there is a great risk of the application running riot and becoming mere "faddishness." To successfully mature a scheme of education in which the intellectual work of the class-room, the activities of the playing-fields, the sober, matter-of-fact contact with material things provided by diverse forms of manual labour, and the humanising influence of social life, are all fully and proportionately represented, is a very difficult undertaking. The man likely to be successful must be a remarkably well-endowed and highly-favoured mortal. It would be too difficult a task to undertake to enumerate the qualities he should possess. But whatever else he may lack, if he is wanting in the saving grace of humour he must fail. A man who is capable of seeing the comical aspect of things will be saved all sorts of extravagances which the interpreter of the manual work doctrine will often be tempted to perpetrate, slight evidences of which are not wanting even in some of the excellent work which has here been reviewed. There are other respects in which the education given at Abbotsholme, Bedales, and Clayesmore differs from an ordinary public school course, and it is possible an opportunity for dealing with them may present itself at some future time.

Unity of Character.—"Moral education must not be content to aim at the development of qualities, however shining and effective. It must estimate consistency of life above this or that quality, and thereby take some security against the production of the type of man in whom what at least appear to be sterling virtues in one sphere of life sadly lack their counterparts in another, if indeed they do not give place to positive vices. It must unify the life as well as enrich it. This does not mean that we can expect even the best among us to be equally strong in all the virtues. On the contrary, men will differ endlessly here, according to their vocation and opportunities. The important matter is that each man, in whatever spheres he may have to play his part, should carry into these the same principle and standard."—Professor John MacCunn in "The Making of Character" (Cambridge University Press).

MARKS AND MARKING.

By Harold W. Atkinson, M.A.
Assistant-Master in Rossall School.

The estimation of a boy's work and of his position in his class by marks is such a feature of our English schools that it is perhaps surprising that marking has not attained almost to the position of a science. We are, however, still groping after improved methods. The purpose of this paper is to briefly consider some of the methods of marking more commonly in use, and to review some of their advantages and disadvantages.

Marking naturally falls under two heads, (1) the marking of work in any given class, and (2) the summation of marks from different classes, to compile form orders or the like. These are sufficiently distinct to render it advisable to consider them apart. The first part of the paper will deal with class marking, and the second part, which will appear next month, with the summation of marks from several subjects with special references to marks for subjects learnt in "sets."

I.—Class Marking.

Two methods that at first sight seem fairly distinct may be differentiated as the numerical and the literal methods. The former uses numbers and the latter letters, $\alpha+$, α, $\alpha-$, $\beta+$, &c. These two, however, are distinct only in the degree of accuracy that each attempts to reach. The literal method is, as a rule, used only in the higher classes. It involves less work on the part of the master, since it is far easier to lump a set of papers together in a "class" than to try to arrange them in order of merit. It has perhaps a less stimulating influence on the pupils than the numerical method, since they do not feel the necessity of such a keen struggle after every possible point to be gained. On the other hand, its use is peculiarly applicable to work of a high standard, to work in which style is of as much, or, it may be, of more importance than absolutely grammatical accuracy. But while useful in such work, it at the same time suffers from the fact that since the line must be drawn somewhere, it is, and often must be, drawn between two papers that really differ very little from one another, and thus must put in two different "classes" pieces of work that on the numerical system would not have such a marked distinction drawn between them. It follows, moreover, from the nature of the case, that in any later numerical evaluation of a series of literal values assigned to a form's work the result will be either a levelling of marks or an excessive differentiation. Let us take a concrete case, that of two pupils who numerically would have always differed by, say, two marks in a series of papers, but would have always appeared in the same literal class. Finally, though numerically far apart, literally they would be equal. Or let us put another case, that of two pupils who differ but slightly, but who happen to be on the border line between two literal "classes," one on one side of it, the other on the other. In the evaluation the difference will be larger than on the numerical system.

For school purposes the numerical method receives the greater favour. Men accustomed at their university to the literal system will almost always, except for the work of high classes, adopt the numerical method, while the reverse is but rarely the case, even for the work of high classes.

The numerical method may, then, be considered as that more specially under discussion, though much of what follows will apply equally to both.

Should the marks for a piece of work be the sum of marks given for what is correct, or the remainder after deductions for errors? Given a piece of work that admits of marking on both systems, as far as general feasibility goes, it will be found that it makes but little difference which method is adopted. The results of marking a piece of Latin prose of a fairly high form will, on either method, produce almost exactly the same relative positions of the pupils. As, however, either one may give results that are to the advantage of certain pupils, it is advisable to alternate between the two. Much work does not permit of either method indifferently. An English essay in a low form scores largely by quantity Manifestly an essay of two pages must score more than one of one page, the quality being equal. Such work must be marked by summation. A piece of repetition, on the other hand, when written out, would generally be most easily marked by deduction. If the lesson set had been too hard and the results were very scrappy, summation would be the simplest method. In short, in such cases the method used is not of great importance. The chief aim must then be to use the method that will give satisfactory results with the least labour. Which that is will be decided by the experience of the teacher.

A question of more importance, and one on which opinions are much divided, is the following. On what principle are we to arrange the maxima for the class work? Is there to be a maximum of, say, 20 for each hour's work, or are the maxima to be proportioned in some way to the character of the work? Both methods have their advocates. The absolute method, that of a fixed maximum, has the advantage of simplicity. The relative method, that of proportioning the maxima to the different kinds of work, gives rise to the difficulty of deciding how to arrange the maxima. The advocates of each justify their action, the one party by assuming that the number of hours devoted to a subject is a criterion of its importance, the other party by the not unnatural conclusion that the harder the subject the more marks it deserves. There is unfortunately a tendency for neither party to recognise the point of view of the other. The middle course is probably the best. If we attempt to arrange our maxima in strict accordance with the difficulty of the subject, we are at once confronted with the difficulty of deciding which are the harder subjects and in what proportion one is harder than another. There is a further fact that cannot be neglected; that while a given subject is harder than others to one pupil, that same subject is perhaps the easiest of all to another pupil. The middle course would be to fix no absolute maxima, but work on an average to some fairly constant maximum; but if in any subject a piece of work rather more difficult than general had been taken, a higher maximum should be assigned to that piece of work. Such a method has the double advantage of giving full reward to difficult work, and at the same time it avoids having to try to arrange the subjects in order of difficulty.

Marking by impression deserves some notice. It is a method which, though useful and often unavoidable, is at the same time open to very serious objections. In marking a set of English essays from a high form, the impression that the work makes on the corrector is the only guide to its value. Does the essay show a power of thought greater or less than that of other pupils, or does it prove the author to be a person of wider reading or of more highly developed powers of analysis? Such questions must be judged by the impression that the essay leaves in the mind of the reader. But the objections to the method are not only manifest *a priori*, but also will soon have made themselves manifest to the man who uses the method. It is exceedingly difficult to weigh all the various points to be taken into consideration, and arrive at a summation of all the merits and demerits of a piece of work with any real degree of accuracy. In the case of such work marked by impression, it is best to use the method called above the literal as opposed to the numerical. It is practically hopeless to estimate accurately whether a paper is to receive 15 or 16 in proportion to the 20 of some other paper. But another more weighty objection is that the impression that a given piece of work makes on the mind of the teacher varies greatly with the exact state of mind of the teacher at the time. An hour's correction of essays or Latin proses reduces the mind of the teacher to a state differing considerably from its state at the beginning of his work, especially so if the papers prove themselves to be of a quality that disappoints him. The papers looked over latest are fairly sure to suffer, even with the most righteously intending teacher. Reduced to its position in the theory of teaching, such a question would appear under the heading of the Psychology of the Emotions. Few men are so much the master of their emotions that they would not find the marks assigned by impression considerably changed if they were to take the same papers again some time afterwards and look through them in the reverse order.

In defence of the method, it may be said that it saves the teacher an amount of labour that would otherwise be immense. The system, for instance, of splitting up a piece of Latin or Greek composition into small sections and marking each section separately involves a far greater expenditure of time; and it is very questionable whether the extra accuracy of marking obtained compensates for the extra time and consequent drain on the energy of the teacher's nerves and brain.

Where other methods will give satisfactory results, marking by impression is to be avoided. This is more particularly the case in the correction of examination papers, where accuracy of estimation of one pupil's work against that of another is of great importance. In the ordinary course of the school work one set of results will balance against another, and the final result will be an average that will not be far from the correct result. In examinations the case is different. The one paper is to decide once and for all.

And it is just this balancing of one result against another that tends to make the exact system of class marking of less importance than might at first appear to be the case. The final average result is sure to be fairly correct. But it is at the same time of advantage to try to aid the accuracy of this final average by various devices, provided they do not seriously hamper the work of the class or throw undue strain on the teacher. For this reason variety of methods of marking is valuable. And this may be taken as the conclusion of the whole matter, that variety of methods of marking will give on the whole a better average result than any one hard and fast method.

(*To be continued.*)

CHAPTERS IN HISTORY.

By A. Johnson Evans, M.A.

IX.—The Eve of the Reformation (1479-1529).

THE fifty years that preceded the calling of Henry VIII.'s Long Parliament saw many changes in Europe. It is well to bear the most important in mind.

(1) The Hapsburg family had risen to domination. Charles, the head of that house, had inherited the Austrian lands, "Burgundy," *i.e.*, the Netherlands and the county of Burgundy (Franche-Comté), as well as Spain and its New World acquisitions, and was not all-powerful only because his widely scattered domains did not give the mutual help that might have been expected. The most important thing for the teacher to remember and insist on is that this Charles was *Archduke* of Austria, *King* of Spain, *Count* of Holland and of Burgundy, but was Emperor of none of these. The word Emperor must in those days not be followed by the word *of*.

(2) As the Hapsburgs had risen by fortunate marriages, so too France was growing by the same means. And just now Brittany fell in by successive Valois kings marrying the heiress to that too long semi-independent duchy. They also saved the *Duchy* of Burgundy from going to the Hapsburgs with the rest of that inheritance.

Now these two powers, Valois and Hapsburg, were enemies for many reasons. Rivalry in Naples, in Milan, in the Burgundian lands, in Brittany, led at last to a series of wars. And England, as yet weak, posed between the two. But she must ally with the owner of Flanders, with which her international trade was mostly conducted, and accordingly we find that, in spite of the glitter of the Field of the Cloth of Gold, her alliance was true to Charles till the battle of Pavia led her to hesitate, and the divorce of Catherine caused a temporary quarrel.

The absorption of the Netherlands in the Austrian house and of Brittany in the kingdom of France affected not only English international politics, but also the thoughts of Englishmen with reference to their own royal family. The Tudors existed for two purposes: to avoid a renewal of the Wars of the Roses, and to prevent England being absorbed into continental politics. The first could be attained by the family supplying a sufficiency of heirs male, and by cutting off all possible dynastic rivals. The second, also by supplying male heirs. Now these did not abound. Make a list of the males of the Tudor family, with dates of birth and death, and note how many lives at any given date stood between the people of England and anarchy or absorption in Hapsburg or Valois. Would the fate of Burgundy or Brittany befall England?

(3) In 1453 Constantinople had fallen to the Turks. The "Eastern schism" was practically at an end, at least for a time. And the learning which the Greeks had preserved, while Western Europe was confined to books in Latin, was flooding the countries that still formed the "Holy Catholic Church." Printing had come to the aid of the scholars who were diligently, nay, enthusiastically, studying the Greek classics and putting forward new editions of the New Testament in its original language. The "Renaissance" reached England in time, and colleges were being founded to encourage the New Learning.

In 1492 Columbus chanced upon the Bahamas, and Spanish adventurers were in 1529 busy exploiting the "Indies" for all they were worth. Cortes had conquered Mexico, and Pizarro would soon be conquering Peru. Portugal and Spain were racing to reach India, while French and English were taking but a small part in the exploration of the New World.

What was the result of the two movements at which we have thus briefly hinted? The Holy Roman Empire, the Holy Catholic Church, was invaded from east and from west at the same time. Men's minds were suddenly enlarged, and both the scholar and the man of action found that it was not through Emperor or Pope that God ruled the *whole* world, as they had thought before. Neither had obvious control over either the Greek language or America. Perhaps the best parallel to take is that of the boy when he first discovers that there are other possibilities than his own home.

Previously, that home of Western Europeans, the Catholic Church, had seemed to arch heaven and earth. (Had not Dante thought of heaven as only a better "Rome" ?) Now it was, like the paternal cottage left early and visited late, such a "little thing" compared with the new worlds suddenly revealed to everyone's view.

A century later, Copernicus and Galileo began to lead men to an even vaster revelation. Read Milton's "Paradise Lost," and specially Raphael's account of the Creation, to realise what enormous distances of thought separate us from our forefathers. They lived on an earth, the only object of God's care, for the exclusive benefit of the inhabitants of which the whole visible universe had been created, the sun to rule the day, the moon the night, the day and night, that is, of the only intelligent creatures in the universe. Nay more! not only was the material universe but a part of man's dominion, but even in revolutions in Heaven, and in wars of the Gods, he played an all-important part. We have partly learned since then to "know our place."

In the study of a period of change like these fifty years, a period when things were only beginning to be, it is essential to keep an eye on dates. For this purpose it is well to make synchronising tables, dates in the margin, names of countries, or princes, or houses, at the top of columns, and events beneath in their appropriate places. Thus, and perhaps thus only, will it be possible to appreciate the importance, both for the time and for hereafter, of such events as the marriages of Henry VII.'s children, his treaties with Flanders, the wanderings of Perkin Warbeck, the diplomacy of Wolsey.

(4) It was on a world thus already in process of change that Martin Luther's denunciation fell—a world of monarchies that had triumphed over assemblies, from the monarchical Papacy which had won against General Councils, to the monarchical kingships and principalities which had won, or were in course of winning against municipal republics, diets, cortes, parliaments and nobles—a world which had begun to lose faith in itself, which had failed to correct its abuses, and which was invaded by new and revolutionary ideas from all sides. It was only in a world like this that it was possible to burn a Pope's Bull, and not perish in consequence.

Luther was, as he said himself, a peasant and the son of a peasant. He had sought salvation in the order of Augustinian friars, and failed to satisfy his needs. His was a revolt in favour of the enjoyment of the good things of life, wine, woman and song. He was no radical revolutionist, but destroyed only as far as was necessary. He was a German revolting against a foreign rule, a conservative whose sympathies were with law and order as against the revolt of those under State authority. He appealed to the Bible, but thought the Epistle of S. James "strawy." He was a Shaker, it is true, but he was not the man to create a new system out of the shaking.

PIONEERS IN EDUCATION.

By FOSTER WATSON, M.A.

Professor of the Theory and Practice of Education in the University College of Wales, Aberystwyth.

VI.—Herbart and The Individuality of the Child.

WHEN once the conception of the "good" will as the educational end has been accepted, it is impossible, educationally, to deal with the mind from the point of view of the mechanical reception of material of instruction alone. The mind not only receives material as content, but, in the act of reception, it shapes its material into its own forms. It is not necessary here to enter into a theory of knowledge. It is sufficient to postulate that mind develops not in proportion to the abundance of things which it possesses (the encyclopædic idea), but in accordance with inner laws of growth, with inner ideals which give the line of direction to the whole activity of the mind. Accordingly it was necessary, to Herbart's thinking, to absolutely demand attention from the teacher not merely to the matter of knowledge, but also, and in the first place, to the mental process itself. Locke and Kant had shown the main principle that in education we must consider the nature of the mind in the man and in the child, so as to influence and direct him to his own self-realisation. All the subjects of teaching, the material of instruction, therefore, must be considered as the means of the educative process, and not as the end of education. This does not mean that these philosophers in any sense deprecate the function of knowledge, but rather that they realise its psychological significance in the development of the growing mind. They are not concerned with knowledge as a product of the fully developed mind. This is emphatically the view of Herbart. "If the teachers possess originality, they will utilise all that comes to hand to provide stimulus and occupation for the objects of their care; if they have foresight, they exclude all which may be harmful to health, disposition or manners."

The child is educated by all which surrounds him; hence the work of the educator is to shape as far as he can his environment, and to select from the vast stores of past and present knowledge and thought that which will best serve as fitting material to help as content of the child's mind, as he progresses from stage to stage, every stage to be considered as an end in itself, though the human, ethical end is present in the thought of the teacher. For by its nature the ethical end of the fully-developed individual cannot but include the end of the individual at any stage. "The teacher must represent the future man in the boy; consequently the aims which the pupil will, as an adult, place before himself in the future must be the present care of the teacher: *he must prepare beforehand an inward facility for attaining them.*" The starting-point of instruction, therefore, is the individuality of the child, and not the desirability of certain knowledge as such. Herbart believes that the "good" will is dependent for its education on the assimilation by the intellect of rightful material, on what he calls "the æsthetic revelation of the world." The objective will with which the child is endowed at birth should be brought into accord with the subjective will as disclosed in the universal moral law.

Will-forming, or character-forming, springs with Herbart from the content of thought, so that morality has its basis in the entire content of the mind of the individual. Now the entire sum of presentations and ideas arises from experience in the presentations themselves, and from intercourse with others, together with the supplementary in-gathering from instruction. Much of the experience and intercourse of the child is out of the control and even out of the knowledge of the teacher. But instruction has to serve as a complement to those as the bases of the child's character, and the educator's value of instruction will depend upon its influence upon the whole region of the will. Herbart's psychology is somewhat complicated, but what he seeks to establish is—that presentations of experience by their interactions give rise to desires. Desire, when successful, leads to expectation. Expectation, united with certainty of attainment, passes into will.

The awakening of rightful desires through the presentations of experience is, therefore, the teacher's especial task. On its intellectual side, this is what we call "having an interest in a thing." Hence the direct aim of a teacher's lessons should be the creation or calling forth of interests in the mind of the child. Since "the æsthetic revelation of the world" involves seeing as many aspects as possible of the world in which we live, it is necessary that the pupil should grow into as wide a circle of interests as can be. We cannot, it is true, enumerate the sum of interesting things. It is not the teacher's thankless part to accumulate apparatus and multiply subjects of lessons. We must, says Herbart, "classify not objects, but conditions of mind." The two great sources of our mental content, Herbart considers, as already stated, to be experience and intercourse. Broadly speaking, these avenues of knowledge have as their provinces, Nature and Humanity. Knowledge consists in our mental representations of the world of things through experience, and our mental relation to humanity through intercourse is the development of sympathy. Hence, if we are to educate towards a many-sided interest in life, we must at any rate provide in our material of instruction for the following interests. In knowledge (*a*) The empirical interest—*i.e.*, for the isolated particulars of experience, apart from their interconnexion; (*b*) The speculative interest—*i.e.*, the search for the causal connexion of things; (*c*) The æsthetic interest—*i.e.*, the ideal side of that which we have perceived through the avenue of the senses. So, too, in the development of sympathy, the educator must arouse (*a*) interest in the human relations of life; (*b*) The social interest. "This disposes of the particular that it may attach itself to the general. It requires exchange and sacrifice, opposes actual emotions, and imagines possible better ones in their place. (*c*) The religious interest. Ufer, the German expounder of Herbart, thus illustrates: "When interest is directed to the history and destiny of mankind, when it is as clear to the understanding as to the feelings that the ordering of the history of man involves something more than mere human power, and that, therefore, the history of each individual does not lie entirely in his own hands, then fear and hope gather in the heart."

The object, then, of education, viewed as instruction, is the arousing and development of many-sided interest. We are so much accustomed to suppose that we make our lessons interesting so as to lure the child on to knowledge that probably most readers of Herbart receive a shock to find the arousing of interest proposed as the end of instruction, and to find the particular knowledge given in a lesson treated as a means to the end of interest. The examinational system has made us worshippers of tested knowledge, systematically and logically arranged, and all instruction seems suspect which will not lend itself to examinational tests. Besides this difficulty, the English teacher too often assumes that he is to so control the pupil as to give him such knowledge as he himself possesses, irrespective of whether it is calculated to arouse a real interest or not. The boy is to have the traditional staple of instruction through the traditional method. Should the old Adam in the young pupil resist his instruction, as is common enough, then the repression to which he will have to submit from the master will be good for him—as discipline. Such repressive discipline will, it is argued, lead to the pupil's mental and moral progress in time, if the master is firm. The English master often by this attitude seems to suggest that the pupil exists for the master, whilst the Herbartian doctrine certainly implies that the teacher exists as such for the pupils. There is no doubt that if we look on scholarship as the goal of educative effort, then the puny efforts of children and of youth may seem worthless and vain to the scholar who has drifted into teaching.

But if we consider the children who in their hundreds of thousands, or let us say boldly, millions, are crowding into the national schools, we shall notice that scholarship, in the scholar's sense, is unattainable by all, for many reasons. But happy are we if we have the faith that there must be a real educability for humanity, which without attaining to the highest intellectual level of scholarship, really touches the child, and helps him to make for his best and highest manhood. It is not enough to say in these days that the primary schools must prepare the children for that station of life into which they are born, or for the occupations into which it is presumed they must go. Herbart has foreseen this latter attitude. He says: "Whatever arts and acquirements a young man may learn from a teacher for the mere sake of profit are as indifferent to the educator as the colour of his coat. But how his circle of thoughts are being formed is everything to the teacher, for out of thoughts come feelings, and from these principles and modes of action."

No one has placed a higher value on the work of instruction or the province of the teacher than Herbart, but it is because he believes that through experience, intercourse, and instruction, must come the building up of character, and he hopes and trusts that with increasing knowledge and insight into his work the teacher may in his province of instruction, with the arousing of helpful interests, counteract when necessary, and supplement where desirable, the gaps left by the individual's experience and intercourse. But high as is the work of instruction, it derives its importance from its close connection with the will. The development of the will is "a making." The pupil must consciously make his own decisions before he becomes moral. The final aim of the educator, therefore, is to so enlarge the width of thought and so intensify the principle of rational activity in the pupil that the teacher's own external guidance and authority may be entirely taken up by the internal practical reason of the pupil without any break in the line of continuity. This position assumes that the starting point of instruction is the individuality of the child. To arouse interests in the child is a more arduous undertaking than even to make teaching interesting. Herbart is well aware that to do it the teacher must have great resources, varied knowledge, and rich sympathy. The very keynote of his Science of Education is: "The aim of those who educate and demand education is determined by the range of thought they bring to the subject."

The doctrine of interests with Herbart carries with it, as I have stated, the corollary of the individuality of the child as the starting-point of instruction. I am putting this as emphatically as possible, not that I wish to suggest that Herbart favours the old aristocratic idea of one child, one tutor, which Rousseau thought necessary for the development of Emile. But one question may, I think, properly be raised in a consideration of Herbart's views, especially having relation to our English system of elementary schools. If the individuality of the child is anything more than a long word, then is not the idea of thoughtful consideration of it, and an adequate attention to it, an almost superhuman demand from teachers under the conditions of the large classes to which they are so often put? Is there not some *via media* between individual instruction of the solitary child by a tutor, and the huge classes where any lapse into individuality on the part of pupils borders upon becoming an unmitigated nuisance to the teacher?

"TRUST thyself: every heart vibrates to that iron string. Accept the place the divine providence has found for you, the society of your contemporaries, the connection of events."—Emerson.

EXPERIMENTAL CHEMISTRY.

A COURSE OF WORK BASED ON THE JUNIOR LOCAL EXAMINATIONS OF OXFORD AND CAMBRIDGE UNIVERSITIES.

By PROF. J. B. COLEMAN, A.R.C.S., F.I.C.
South-Western Polytechnic, Chelsea.

V.—Oxidation and Reduction—Carbon—Oxides of Carbon—Carbonates—Combustion—Flame.

THE subject is treated in such a manner as to give the *teacher* working details of the experiments suitable for the course. The experiments, unless otherwise stated, are to be performed by the student. If the experiment is starred (*), it should either be performed by the teacher in the lecture room, or done by the student under the *personal* supervision of the teacher.

(41) OXIDATION AND REDUCTION.

Oxidation. It was shown in Articles I. and II. that many substances alter in the air, due to their combination with oxygen. For instance, iron, at the ordinary temperature, rusts or is converted into the red oxide. Other elements, such as magnesium, phosphorus and sulphur, are converted into oxides at a much higher temperature. This change, which is due to the oxygen present in the air, is termed *oxidation*.

Sometimes the alteration is due to the production of a higher state of oxidation; thus when *yellow* oxide of lead (litharge) is heated in the air it forms the red oxide of lead (red lead), which contains a greater proportion of oxygen than litharge. A similar change may be produced in the lower oxide of iron by the method described below.

Expt. 79.—Dissolve a few crystals of green vitriol (ferrous sulphate) in some recently boiled and cooled water. This procedure is necessary to free the water from dissolved oxygen. Now add a little potassium hydrate solution also made with air-free water. Notice that the precipitate first produced is almost white, but when it is shaken so as to expose it to the air, it turns darker, and finally changes to brown.

This change is due to absorption of oxygen, the *ferrous* oxide first produced being oxidised to *ferric* oxide.

Reduction. When oxygen is taken away from a compound, that compound is said to be *reduced*, and the substance producing this change is termed a *reducing agent*.

Carbon possesses great reducing power, as may be shown by its action on lead oxide (litharge).

Expt. 80.—Make a *small* hole in a sound piece of charcoal by means of a penknife or a small coin, and place a small quantity of lead oxide in the cavity.

Heat the lead oxide in the *inner* blowpipe flame in the manner shown in Fig. 26.

The carbon of the charcoal will combine with the oxygen of the lead oxide, and thus *reduce* the compound to metallic lead.

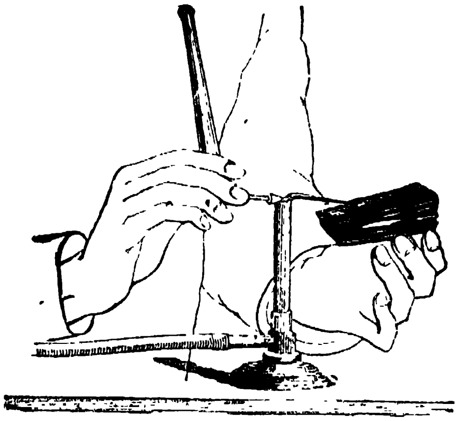

Fig. 26. Reduction by Charcoal

(42) CARBON.

Carbon is known in many forms, both natural and artificial. The purest form of natural carbon is the diamond; graphite is a less pure form; while coal is still less pure.

Amongst the varieties of artificial carbon may be mentioned wood-charcoal, bone-charcoal and coke, obtained by heating wood, animal matter and coal respectively, out of contact with air. Another form, lamp black (soot), is obtained by condensing the smoke from imperfectly burning carbonaceous bodies such as oils and resins.

Expt. 81.—Heat in separate test-tubes small pieces of wood, bone, and coal. Test the vapour first given off with test-papers, and notice that after a time inflammable gases and tarry matter are given off.

When no more vapour is given off, turn out the contents of the test-tubes and contrast the appearance of the wood charcoal, animal charcoal, and coke so produced.

Charcoal possesses great deodorising and decolorising power. This property seems to be mainly due to the power that charcoal possesses of absorbing oxygen and other gases.

Expt. 82.—Boil up a little blue litmus solution with about 30 grams of *bone-charcoal* in a 4-oz. flask. Allow to stand for a short time and filter. The liquid will be found to be colourless.

(43) CARBON MONOXIDE.

Carbon monoxide is produced when oxygen is passed over a large surface of red-hot carbon.

This gas is formed when air passes through the red-hot coal in open fire grates; it may frequently be seen burning with its characteristic blue flame on the surface of the glowing fuel. This gas is very poisonous and should not be inhaled.

Expt. 83.—Carbon monoxide is most readily prepared by the action of sulphuric acid upon sodium formate.

Fit up the apparatus shown in Fig. 27. Cover the bottom of the flask with solid sodium formate, and add about double its volume of strong sulphuric acid. Apply a gentle heat, and after the air has been displaced, collect three jars of the gas.

Expt. 84.—Add a little lime-water to a jar of the gas, and notice the liquid remains clear.

Push a taper into an inverted jar of the gas. The gas will burn with a blue flame, but the taper will be extinguished. When the gas ceases to burn, add a little lime-water and shake. The liquid will become milky, showing that carbon monoxide, on burning, produces carbon dioxide.

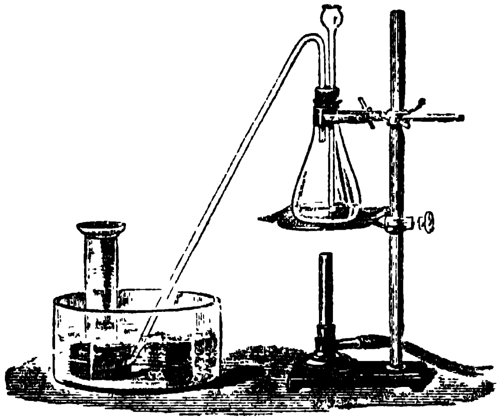

Fig. 27.—Carbon monoxide from sodium formate.
(From Clowes and Coleman's "Elementary Practical Chemistry I and II" (Churchill).)

(44) CARBON DIOXIDE.

This gas is produced when charcoal was burnt in oxygen (Article II., expt. 30). It is usually obtained from some form of calcium carbonate.

Many metallic carbonates give off this gas on heating, and leave behind the oxide. All carbonates give off this gas when treated with acids.

Expt. 85.—Place a little dry *precipitated* calcium carbonate in a piece of combustion-tube six inches long, and closed at one end. Fit a bent delivering-tube into the open end, and allow the end of the delivery tube to dip into a small quantity of lime-water contained in a test tube. Gradually heat the end of the combustion-tube, containing the calcium carbonate, to redness with the bunsen flame. Bubbles of carbon dioxide gas will pass through the lime-water, which will render the liquid milky, showing the presence of carbon dioxide gas.

Expt. 86.—Carbon dioxide is conveniently prepared in quantity by acting upon marble with hydrochloric acid.

Since this gas is somewhat soluble in water and heavier than air, it may be collected by downward displacement.

Fit up the apparatus shown in Fig. 28. Place some small pieces of marble in the bottle, and pour in sufficient water to cover the marble. Now add strong commercial hydrochloric acid until a brisk evolution of gas ensues.

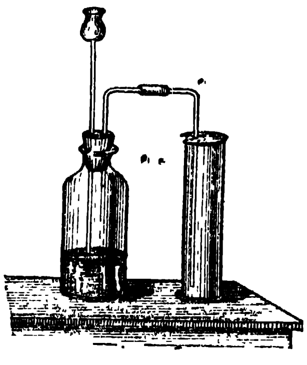

Fig. 28.—Preparation of carbon dioxide.

Collect three jars of this gas by downward displacement as shown. The jars may be known to be full when a lighted taper is extinguished when placed inside the mouth.

Expt. 87.—Plunge a lighted candle in a jar of the gas, the candle will be extinguished and the gas will not burn.

Expt. 88.—Pour some lime-water into a jar of the gas and shake; the lime-water becomes milky owing to the separation of insoluble chalk or calcium carbonate (distinction from nitrogen). If too little lime-water is used the precipitate redissolves (see expt. 91).

Expt. 89.—Carbon dioxide is considerably heavier than air, as may be shown in the following manner :—

Pour a jar of this gas slowly into an empty jar, in the same way as you would pour a liquid from one vessel to another (Fig. 29). After a short time test both jars with a taper.

The upper jar (B) will not contain any carbon dioxide, but the lower one (A) will extinguish the taper, showing that carbon dioxide is present.

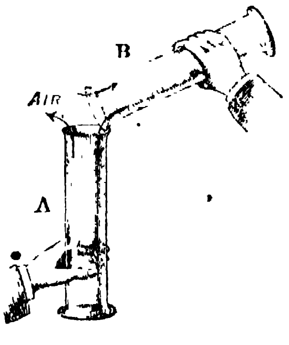

FIG. 29.—Carbon dioxide heavier than air.

Expt. 90.—The solubility of carbon dioxide in water is readily shown as follows:—Half fill a jar with water, and displace the remaining air by means of carbon dioxide gas. Close the mouth of the jar with the wetted palm of the hand and shake vigorously. This jar will adhere to the hand owing to the reduction of the internal pressure by the solution of the gas in water. The solution of the gas may be further shown by adding lime-water to the liquid, when the lime-water will become milky.

Expt. 91.—Dilute some lime-water, placed in a small beaker, with an equal volume of distilled water. Dip the end of the delivery tube (Fig. 28) into the lime-water, and allow carbon dioxide gas to bubble through. After a time the calcium carbonate first precipitated will redissolve, showing that this substance is soluble in water containing dissolved carbon dioxide.

Boil some of the clear liquid for several minutes, the liquid will become milky again, the "chalk" being insoluble in the water now, since the carbon-dioxide has been driven off by heat.

This explains the coating which forms when "chalk" waters are boiled (see Article III., expt. 39).

(45) CARBONATES.

Carbon dioxide is slightly soluble in water (expt. 90), and gives a faint acid reaction; this reaction is better seen with soda-water, which is a *stronger* solution of this gas made under pressure. The solution may be looked upon as a dilute solution of carbonic acid.

The carbonates may frequently be made by passing carbon dioxide through water containing dissolved or suspended oxides of the metals. Calcium carbonate was made in expt. 91. Sodium carbonate may be prepared by passing carbon dioxide gas through sodium hydrate solution until the solution is acid, and then evaporating off the water until the solution crystallises on cooling.

Test for Carbonate.—All carbonates give off carbonic acid gas with effervescence when treated with acids. This gas may then be recognised by means of lime-water.

Expt. 92.—Place a little solid sodium carbonate in a test-tube and add dilute hydrochloric acid. The heavy gas will remain in the tube. Pour out the gas into a second test-tube containing a little lime-water, taking care that none of the liquid flows out. Close the mouth of the tube and shake; the lime-water at once becomes milky.

(46) COMBUSTION.

The term combustion, when used in its widest sense, is applied to cases of chemical action that are accompanied by the production of heat and light. It is very generally applied to cases of oxidation only, where the whole or a portion of a substance combines with oxygen, attended with heat and light.

Many instances of combustion have been described. The common *combustibles* used for heating and lighting purposes (such as coal, wax, oil and gases) consist mainly of carbon and hydrogen.

Products of Combustion.—The main products of combustion of carbonaceous substances are carbon dioxide and water, as may be shown as follows :—

Expt. 93.—Hold over the flame of (1) a candle, (2) an oil-lamp, and (3) a small gas jet, a cold, dry glass cylinder. Notice the deposition of moisture in each case, which is due to the water formed during combustion. Place a glass plate over the mouth of the jar, and test with lime-water; the carbon dioxide which is also formed will render the lime-water milky.

(47) FLAME.

It is necessary for the production of flame that the burning substance should be either in the state of gas or vapour. The area of chemical action may be shown to be the surface of contact of the gas or vapour with the air. Hence, if one gas burns in the atmosphere of another, such as a jet of coal-gas in air, the reverse should also hold good, *i.e.*, a jet of air should burn in an atmosphere of coal-gas. This phenomenon may be shown as follows :—

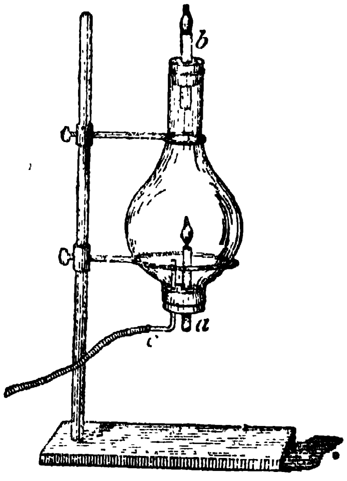

FIG. 30.—Air burning in coal-gas.

**Expt.* 94.—Procure a lamp-glass and attach it to a retort stand, as shown in Fig. 30. Close the bottom orifice of the glass with a cork, bearing the tubes, one (*a*) ½ inch wide and about 4 inches long, the other (*c*) narrow and bent as shown.

This latter tube is attached to a gas supply. Close the upper orifice of the lamp-glass with a cork through which passes a short piece of tube (*b*).

Close the tube (*b*) with the finger and turn on the gas supply. When the glass is full of gas, light the gas at (*a*) and take off the finger from (*b*). The gas now passes through (*b*), and the flame is drawn up the tube (*a*) and continues to burn. Light the tube (*b*), when there will be two flames, one at tube (*a*) air burning in coal-gas, and another at (*b*), coal-gas burning in air. Thus the terms supporter of combustion and non-supporter of combustion may, in certain circumstances, become interchangeable.

Expt. 95.—**Flame is hollow.**—For this experiment and the next one, either a candle flame may be used or the upper portion of a bunsen-burner may be screwed off and a small gas-jet obtained by lighting the gas issuing from the fine orifice below.

Press upon the flame a piece of white paper for a few seconds. A more or less perfectly formed charred ring, with a white centre, will be seen upon the upper surface of the paper. This result shows that no combustion takes place in the middle of the flame.

Expt. 96.—**Structure of a candle or gas flame.**—Carefully examine the flame used in the last experiment. Three main portions may be noticed.

(1) *An inner dark portion* consisting of unburnt vapour or gas. Hold a short piece of glass tube in this portion, in an inclined position, with the lower end in the dark portion of the flame. The upper unburnt vapour may be kindled.

(2) *A luminous portion.* Hold a piece of glass rod in the bright portion of the flame; it will be rapidly coated with soot. The light which is mainly given by this portion of the flame is due to incandescent particles of carbon.

(3) *A pale outer mantle* not readily seen, but is better seen if a little sodium carbonate is scattered above the flame. Here complete combustion takes place, the carbon and hydrogen burning to carbon dioxide and water, as shown in experiment 95.

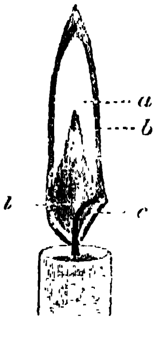

FIG. 31.—Structure of candle flame.

(From Clowes and Coleman's "Elementary Practical Chemistry"—J. and A. Churchill.)

Practical Work in Science.—"The older learner who is told to dissect a flower, and to set apart the pistil, the stamens, the corolla and the seed vessels, and to discover how many of the organs in a plant are vital, and what are their several functions; the student in a laboratory who makes by himself an analysis of a compound, and knows how to separate carbon from oxygen and from hydrogen, passes through a kind of training which could not be acquired by reading or by hearing lectures. He learns in this way patience and minuteness of observation."—Sir Joshua Fitch in "Educational Aims and Methods" (Cambridge University Press).

ENGLISH HISTORY, 1603-1715.

TWO HUNDRED TOPICS ARRANGED ALPHABETICALLY.

By C. S. FEARENSIDE, M.A.Oxon.

THE Oxford Local authorities have prescribed for this year's examination two alternative periods of English History—viz., 1066-1399 and 1603-1715: Senior and Junior candidates have the choice of either, while Preliminary candidates are restricted to the latter period. This latter period, as being common to all three grades, has been selected as the better field, not only for the "Teachers' Notes" which came to a close in last month's issue of this magazine, but also for the subjoined list of "two hundred topics" arranged on a plan similar to the three previous articles in THE SCHOOL WORLD. Teachers who have selected the earlier period, and who find these lists useful, may be referred to the "two hundred topics" appearing in the November issue.[1]

These lists, as I have previously stated, "are not so much designed to forecast questions likely to be asked as to indicate those historical points which a large and varied number of persons, whose favourable judgments are widely sought and respected, have considered to be worthy of attention." Some suggestions for use, which are I hope both legitimate and practical, will be found in the June, 1899, issue of THE SCHOOL WORLD.

Of course these lists, like most other educational "helps," can be perverted to purposes which may fairly be called "cram." There may be persons who regard history—either generally or so far as they themselves are concerned—as a troublesome, if not impossible, sort of thing to teach; who look upon examiners as nuisances specially created to be circumvented; who consider "teaching" simply as a process of putting pupils up to the dodges of examiners; and who, not altogether without solid grounds, hold examiners to be uninventive persons with a habit of repeating themselves. Such persons are quite welcome, if they think it worth while, to take these lists of topics set and "cram" their pupils with "tips" on the examination topics here indexed. It is not for such persons, however, but for teachers that these lists are both composed and accepted for publication in THE SCHOOL WORLD. It has been remarked that "The devil can cite Scripture for his purpose," but it does not follow that Scripture was written expressly for the devil.

From another point of view, the annexed list may be regarded as a synoptic reminder of the very large amount of sheer memory work exacted by examiners in History. Every one of the subjoined topics has been "set" by examiners in Junior papers: presumably, therefore, no Junior candidate who did not at least know something about every one of them could be *sure* of attaining the maximum of marks assigned to the paper. It might be interesting to see how far the present Oxford Local Examiners would be able to realise the ideals held up for us by their predecessors; in fact, to "hoist the engineer with his own petard."

All the underwritten words have appeared in Junior Local papers during the past twenty years. In the first column topics which are marked with an asterisk (*) have been set more than twice in Junior papers: those printed in **dark type** are common to Oxford and Cambridge, Senior and Junior. Names of persons are distinguished by capitals; the family names or titles corresponding to the names as here printed are left to be filled in at discretion. In the second column only those terms printed in *italics* have been explicitly set for description; the rest appear only incidentally in the papers analysed. Many of them are suitable to offer for definition and illustration by such Senior Students as offer *Politics*.

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[1] "English History, 449-1509," THE SCHOOL WORLD, vol. i., pp. 413, 414. Of the hundred "Junior Topics" which appear there, the following twenty-seven are inapplicable to the period 1066-1399:—Nos. 1, 5, 9, 14, 19, 23, 24, 33, 34, 38, 42, 46, 48, 49, 59, 62, 66, 67, 68, 71, 72, 80, 87, 89, 90, 91, 94.

JUNIOR TOPICS.	SENIOR TERMS.
1. *Act of Settlement.	Act.
2. Act of Uniformity.	Administration.
3. ADDISON.	Admiral.
4. Almanza.	*Agitators.*
5. *Anglo-Scots Union.	Alliance.
6. BACON.	Archbishop.
7. BENTINCK.	Assembly.
8. BERWICK.	Battle.
9. *Bill of Rights.	*Benevolences.*
10. BLAKE.	Bill.
11. **Blenheim.**	Bishop.
12. Bohemia.	*Cabal.*
13. *BOLINGBROKE.	Campaign.
14. *Boyne.	Civil List.
15. BUCKINGHAM.	Civil War.
16. BUNYAN.	Claim.
17. CHARLES XII.	Colonies.
18. **Clarendon.**	Classes.
19. Conventicle Act.	Commonwealth
20. **Cromwell.**	Company.
21. DANBY.	Conformity.
22. Darien.	Conquest.
23. Declaration of Rights.	Constitution.
24. DEFOE.	Constitutional.
25. Dover.	Contract.
26. *Dunbar.	Conventicle.
27. *East India Company.	Convention
28. Edgehill.	*Convention Parliament.*
29. ELIOT.	Court.
30. ELIZABETH (of Bohemia).	Covenant.
31. EUGENE.	Crown.
32. Exclusion Bill.	Dean.
33. Fifteen, The.	Declaration
34. *Gibraltar.	*Divine Right.*
35. Glencoe.	Duke.
36. GODOLPHIN.	Dutch.
37. *Grand Remonstrance.	Earl.
38. Great Contract.	General.
39. Habeas Corpus Act.	Government.
40. HAMPDEN.	*Great Rebellion.*
41. HARLEY.	Grievance.
42. High Commission.	Impeachment.
43. *Instrument of Government.	Insurrection.
44. **Ireland.**	Jacobite.
45. Jamaica.	King.
46. Kentish Petition.	Law.
47. Killiecrankie.	League.
48. *La Hogue.	*Levellers.*
49. *LAUD.	Liberty.
50. Londonderry.	*Limited Monarchy.*
51. Low Countries.	*Little Parliament.*
52. Madrid.	Lord.
53. Malplaquet.	*Long Parliament.*
54. *MARLBOROUGH.	Minister.
55. *Marston Moor.	Monarchy.
56. MILTON.	*National Debt.*
57. MONK.	*Non-jurors.*
58. *MONMOUTH.	Ordinance.
59. ***Naseby.**	Parliament.
60. **OATES.**	Parties.
61. **Occasional Conformity Act.**	Peace.
62. **Oudenarde.**	Personal Government.
63. PETERBOROUGH.	Petition.
64. **Petition of Right.**	Plantation.
65. Philiphaugh.	Plot.
66. Pilgrim Fathers.	Policy.
67. Popish Plot.	Pope.
68. Pride's Purge.	Popular Discontent
69. PYM.	Pretender.
70. *Quebec.	Prince.
71. **Ralegh.**	Protectorate.
72. Ramillies.	Queen.
73. Rathmines.	Rebellion.
74. RUPERT.	Reign.
75. SACHEVERELL.	Religion.
76. SANCROFT.	Remonstrance.
77. SARSFIELD.	Restoration.
78. **Scotland.**	*Revolution.*
79. Sedgemoor.	Right.
80. Self denying Ordinance.	*Rump.*
81. Seven Bishops.	Settlement.
82. SHAFTESBURY.	Siege.
83. SHREWSBURY.	Ship-Money.
84. *Solemn League and Covenant.	Sovereign.
85. SOMERS.	Statute.
86. **South Sea.**	Stuart.
87. Spanish Match.	Subjects.
88. **Spanish Succession.**	Succession.
89. STANHOPE.	*Tables* (The).
90. **Star Chamber.**	Throne.
91. **Strafford.**	Tories.
92. SWIFT.	Treaty.
93. Triennial Act.	Trial.
94. Triple Alliance.	Triennial.
95. Ulster.	Tudor.
96. *Utrecht.	Unconstitutional.
97. Villa Viciosa.	Uniformity.
98. **Walpole.**	Union.
99. Westminster Assembly.	War.
100. Worcester.	*Whigs.*

CURRENT GEOGRAPHICAL TOPICS.

By A. J. HERBERTSON, Ph.D., F.R.G.S.

The Gold Coast and Ashanti.

THE Gold Coast lies between Cape Three Points, "a succession of towering cliffs," and Cape St. Paul, east of the mouth of the muddy Volta, and includes the basin of the Pra. The flat yellow beach, with gold grains in its sand, forms a harbourless barrier to the reeking malarial forests of the flat land, beyond which rise tree-covered hills. The sea breaks on this coast in great waves, forming a surf which takes its toll of goods and men attempting to cross it. The gold and the natives attracted the early European adventurers, and Portuguese, Dutch, Danes, Prussians and British built their forts to protect their slaves and other goods and chattels. Elmina, the earliest fort, Cape Coast Castle and Christiansborg, are still trading centres, and Akra (Accra) is the present seat of the British Government, whose jurisdiction runs from beyond Axim, west of Cape Three Points, past the mouth of the Volta.

Mr. Bindloss has given a vivid description of the coast in his book "In the Niger Country." "Imagine a line of glaring, yellow beach, half-hidden by leaping foam; a grim stone fort . . . . . rising from a smoking reef; a steep bluff where European factories and mud huts are any way mixed together beneath the climbing palms. . . . . In spite of the heat . . . . . . everything reeks with damp; no metal can be kept bright; and clothes unworn go mouldy in a week. Malarial fever is always there, dysentery and cholera strike the white man down, small-pox is generally at work among the swarming natives."

Gold is still found, but palm kernels and oil, india-rubber (that of Akra being the best in Africa), mahogany and other timbers from the great forests are the most valuable exports, for which cotton goods and bad spirits are exchanged. To further trade, some harbour works are contemplated at Akra, and railways from several points on the coast are to be built to the interior. One is being made from Sekondi to Tarkwa, north of Cape Three Points, and it is proposed to continue it to Kumasi, in Ashanti.

The gold found in sea and river sand probably comes from the hills of the interior, which are much less unhealthy than the coast, and are inhabited by a vigorous race, the Ashantis. They were conquered by us in 1873-4, and again in 1895-6,[1] since which date the land has been under British administration, with Kumasi, the ancient capital, as chief centre. It is very difficult to reach it from the coast through the tangled forest, where a path cut through the woods soon becomes overgrown.

The coastal tribes are known as Fanti, those of the hilly interior as Ashanti. Both are fine types of tall men, the latter somewhat lighter in colour, braver and more intelligent.

Ashanti consists of seven kingdoms, over which the King of Kumasi is paramount; "the presence of the other six chiefs at his 'stooling,' or installation as King of Ashanti, has always been legally indispensable." The golden coronation stool is said to play its part in the present outbreak against British authority, but it is probable that economic as well as sentimental interests are involved. "

Beyond the forests of Ashanti is a comparatively healthy, grassy, upland region.

There are two articles in the 1896 volume of the *Scottish Geographical Magazine* (pp. 10 and 441) which give a good account of the Gold Coast and Ashanti, the first article being illustrated by a useful map.

Swaziland.

Swaziland is the undulating land between the Drakensberg and the Lebombo mountains, between the latitudes of Delagoa and St. Lucia bays. The semi-nomadic Boers on the north-east of the High Veld plateau have long been in the habit of driving their flocks and herds into its low-lying valleys in winter, and the country, whose independence was recognised by Britain and the Transvaal in 1884 and 1890, has been administered by the South African Republic since 1894, the rights of natives being preserved, and British who settled before 1893 having full burgher rights in the Republic.

The country is well watered, is drained by the Usuti and its tributaries, and is fertile, but somewhat too low to be healthy for European settlement. It consists of "beautiful open glades, and long reaches under rock-crowned hills, where the wagon passed through splendid, level, park-like, land, and wended its way among noble trees. . . . Sometimes we had to pass through heavy swamps and small reedy vleys, where the mud was so deep that more than once we had to off-load. Game was almost always in sight" . . . . . "elands, blue wildbeeste, rhinoceros, roan antelope (a huge buck as big as a horse), waterbucks, kudus, sassabi (bastard bartebeeste), zebras, boars, giraffes, lions, and many others."

The country is rich in minerals, gold and coal are worked, and tin formerly was, by the Europeans, who number about 1,000, while there are probably about 50,000 Swazis.

PUPIL TEACHERS AND ELEMENTARY EDUCATION.

The report of Mr. T. S. Aldis, Chief Inspector for the West Central Division, to the Board of Education, which has just been published, contains an abundance of valuable hints to teachers. Since the remarks are the outcome of the work of inspection of the elementary education of five counties with a population of 2,039,205, they may be considered very general in their application. The following extracts from the report are of particular interest.

The Supply of Pupil-Teachers.

The dearth of pupil-teachers is becoming a matter of urgency on account both of the immediate inconvenience and of the consequent dearth which it creates in the supply of teachers of a higher grade. The School Board in Birmingham require more than five hundred pupil-teachers with a view to the future supply of qualified assistants; and they can, with all their efforts and inducements, obtain only three hundred. This is the more noticeable since other large towns find no difficulty. Birmingham has, in the branch grammar schools for boys and girls which form so important a part of its great provision for secondary education, exceptional sources of supply both for quality and quantity: and these are supplemented by the higher grade schools of the Board. Moreover, a girl who enters the Board Pupil Teacher centre, working half time only in school, and unburdened by responsibility for a class, has emphatically a "good time" of it throughout her career. And yet the Board require nearly twice as many as they can get. The causes appear to be in the first place the ease with which young girls of fourteen and fifteen can obtain work in offices, type-writing and similar employment, and the unwillingness of parents to forego the immediate earnings of their daughters; and secondly, the fact that the entrance examination of the Board has been possibly too alarming, and certainly too inelastic. This latter obstacle can be removed or diminished; the former difficulty will be always operative. In the meantime I am more and more struck with the continual improvement in physique, in appearance of intellectuality, in happiness of expression, and in interest in their work, of such candidates as are employed.

Ruler Worship.

There is too much distracting of a child's attention from the proper subject of his efforts to some other subject. The great principle—valuable not merely in school, but in every time and walk in life—that when you are engaged upon one thing your mental powers should not be dissipated, your intellectual intentness weakened, by the attention being diverted to some other subject, has been sadly lost sight of. I use the past tense because from what has already been done I feel sure that by the time these words are printed the cause for the censure will have largely disappeared here.

It is lamentable, for instance, to think of the appalling waste of time that has resulted from unintelligent ruler worship. While a child is supposed to be bending its mind to arithmetic it is far more occupied with that bastard kind of "neatness" that is gained by ruling innumerable straight lines wherever perverted ingenuity can find an excuse. Until lately the ruler has been a fetish. I have known more than twenty minutes out of forty-five taken up with the ruler in an arithmetic lesson. I have counted seventy-three separate lines for not one of which was a ruler needed, and of which more than half were totally unnecessary, on one page of an exercise book. I have seen a sixth standard boy, when writing down £21 : 17 : : 6 take the ruler to draw the dots between the 21 and the 17, the 17 and the 6; while his neighbour was using his in order to draw the line—not the length of his little-finger nail—to separate the numerator of a fraction from the denominator, and the two lines of the sign ×. And all these absurdities I have heard defended on the ground of "neatness." So, too, I have often known a lesson on composition degenerate into an exercise on handwriting. It is an educational crime to insist—in composition—upon the best handwriting; for then neither the amount of information, nor the logical sequence of ideas, nor the language in which those ideas are conveyed, nor the punctuation—none of the things which make composition—will receive their due attention. A boy upon whom the excellence of the handwriting lies heavy will never think of a semicolon.

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[1] "The Downfall of Prempeh." By Major Baden-Po

Object Lessons.

The teachers generally are earnest, devoted to the children, and often show surprising skill in the difficult task of working a school single-handed. The prevailing fault is bookishness. Surrounded by the wealth of a lovely county, the teacher and children turn to study "caoutchouc" from a science reader and microscopic samples sewn to a card. One teacher placed "the pronoun" in his object-lesson list. The illustration of the persons by children in the class was too real to be allowed in grammar, and must be saved for a more appropriate heading. Such subjects as cookery, dress-cutting, cottage gardening, woodwork, ought to be introduced, one at least into every school. To increase the time the child spends in school, without enlarging the curriculum in the direction in which all are agreed it ought to be enlarged, will be a doubtful gain.

METHODS OF MANIFOLDING BY COPYING MACHINES.

THE time is approaching when teachers will require to make a number of copies of examination papers for use in their forms at the end of the term. A simple and satisfactory method of obtaining several copies of a drawing, examination paper, letter, or other document, is indeed in constant demand in every school, and may be regarded as an essential part of the equipment. Various kinds of copying apparatus are available, and the following description of the chief types should be of service to the teacher who proposes to obtain a duplicator.

Though the forms of copying apparatus here described differ from one another in some particulars, they may all be arranged in three groups. One group contains apparatus in which the manuscript to be copied is written with a specially prepared ink, and transferred to a gelatinous surface, from which the copies are obtained by pressure. This is the principle of the well-known "Hectograph" apparatus. A second group contains apparatus in which a pen consisting of a minute wheel is used to write upon a waxed or otherwise prepared paper, and copies are obtained from the stencil thus produced, by pressing ink through the perforations. This is the principle of the "Cyclostyle." In the third group, a stylus consisting of a steel pencil is used to write upon a waxed paper laid upon a cross-grained surface of steel. A stencil similar to the previous one is thus obtained and is used for printing in exactly the same way. This is the principle of the "Mimeograph" apparatus.

The principal differences between the copying machines in each group are in the quality of the materials supplied and the method of printing. Each machine, however, has some points in its favour, and the object of this article is to state the chief characteristics of the copiers which have been examined or used by us. As typewriters are not largely used in school work, we have omitted from the present article any mention of the numerous methods of producing copies of type-written documents.

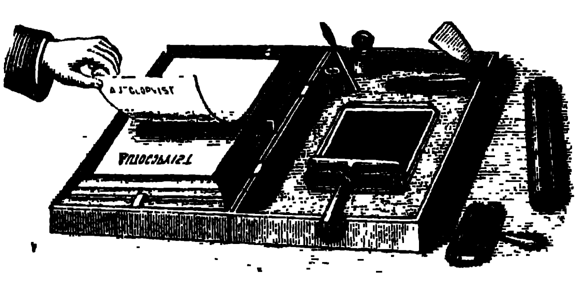
The Hectograph, or Cromograph, is known to everyone who has had to make copies of manuscripts. It usually consists of a shallow zinc tray containing gelatine, and a bottle of violet aniline ink, specially prepared for use with it. The document to be copied is written with this ink and is afterwards pressed upon the gelatine surface, the result being that the characters are transferred to the gelatine. A number of copies can be taken from the printing surface thus prepared, merely by placing a sheet of clean paper upon the gelatine, and rubbing the back gently.

Each copy is, however, slightly fainter than the preceding one. After the gelatine has been used in this way, the ink upon it must be washed off in order to use the apparatus again, or it must be left for some time unused, until the printing has disappeared from the surface. The rapidity with which the surface clears depends upon the nature of the composition used.

A gelatine copier which is similar in principle to the Hectograph, but has several advantages over it, has been devised by Mr. R. C Gilson, M.A., and is made by Mr. J. A. Smith, Harrow-on-the-Hill. The composition used requires no washing, and the ink which remains on the pad after use disappears entirely in a few hours, so that the apparatus always remains bright, transparent, and ready for use. There is also little or no tendency to the formation of round pits in the surface. In most forms of the Hectograph the occurrence of these pits is a serious objection, as they soon render the surface useless, and admit of no remedy save the temporary one of remelting the composition.

Another improvement is the use of glass bottoms in the trays containing the composition. This is a great gain in two ways—(1) complete flatness is secured, and the lightest pressure in printing will secure impressions which are equally good all over. (2) An indication is given how long to leave the original upon the pad before proceeding to take the copies. By looking through the transparent bottom of the tray the right moment to detach the original can conveniently be judged. The apparatus is the most serviceable and effective form of Hectograph we have used, and the composition clears much faster than any other that has come under our notice.

The Autocopyist is an improvement upon the Hectograph. Instead of the tray of gelatine, a gelatinised parchment sheet is used. The sheet is first moistened with water, and then stretched upon a frame. The writing to be copied is done upon ordinary paper with an ordinary pen, and a special ink, which is, however, as fluid as the usual writing ink. The draft is next placed upon the parchment sheet for a few minutes, in the same way as with the Hectograph, and is then transferred to it. To obtain a copy, an inked roller is run over the parchment surface forming the negative. The

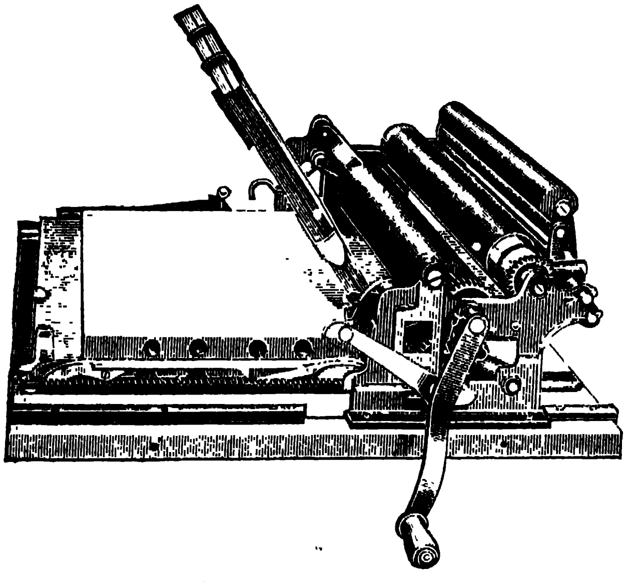


The Autocopyist.

ink only adheres to the writing, so that when a sheet of paper is subsequently pressed upon the surface, a clear copy of the original is obtained in printer's ink. The parchment sheet to which the original draft is transferred thus behaves like a lithographic stone, and anything that can be drawn or written with an ordinary pen can be reproduced by the apparatus in permanent black equal to lithography.

Another use to which the Autocopyist can be put with little trouble is in the reproduction of photographic negatives for school magazines or other purposes. To do this, the gelatinised parchment sheet is sensitised by immersion in a three-per-cent. solution of potassium bichromate, and when dry, is placed under the negative and printed as with albuminised paper. When sufficiently exposed, the parchment sheet is removed from the printing frame, washed and stretched on a frame. This constitutes the printing surface, which is inked with a roller. A sheet of paper is then placed upon it, and pressed with an ordinary copying press, when a perfect copy of the original is produced, which does not require any toning or fixing. The results obtained are excellent, and as a single apparatus can be used for copying manuscripts, or for reproducing photographs, the Autocopyist is well worthy of attention.

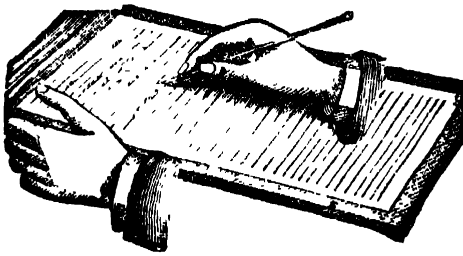
Various forms of copying apparatus, in which a stencil is produced upon waxed paper by writing with a cyclostyle pen, are made by the Cyclostyle Company. In the Automatic Cyclostyle manufactured by this firm a sheet of the prepared paper is stretched over a zinc plate, and the manuscript to be copied is written with a pen which perforates the paper by means of a revolving point. Errors can be erased by merely rubbing the thumb-nail over the writing until the letters have been obliterated. So far the method is similar to the old cyclostyle process; the improvement lies chiefly in the printing machine. The frame containing the stencil prepared as described is placed in the bed of the machine shown in the accompanying illustration. Ink is squeezed upon the top roller from a tube and distributed evenly upon it by an ingenious device. A sheet of paper is then placed upon the metal plate underneath the stencil, and the handle is turned, the result being that the bed of the machine passes under the rollers, and ink is pressed through the stencil to the paper, thus producing a copy. After the stencil has been prepared, therefore, one action prints a copy, opens and closes the frame, and re-inks the bottom roller, which is automatically raised from the stencil and made to touch the inking roller on the return journey. Given a good stencil—and there is no difficulty in producing one—a boy can turn out clean copies quickly without the slightest difficulty or mess, merely by feeding the machine with paper and turning a handle alternately in right-handed and left-handed directions. The Neo-cyclostyle is a copying apparatus in which a wheel-pen is used to produce the stencil, as in the Automatic Cyclostyle, but a hand roller is used instead of the printing machine. It is, of course, cheaper than the Automatic Cyclostyle.



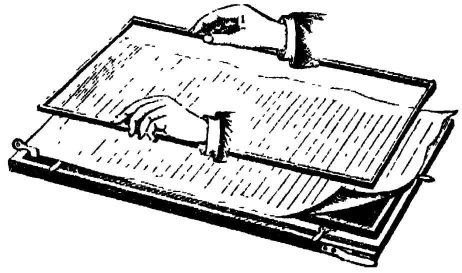
The Automatic Cyclostyle.

The method of producing a stencil by writing with a metal stylus upon waxed paper placed upon a fine cross-grained surface of steel was invented by Mr. T. A. Edison. The authorised British agents of the Mimeograph, as this duplicating apparatus is called, are Messrs. H. F. Martyn & Co. Many forms of copying apparatus utilise the Mimeograph principle, with little or no modification.

In the Edison Mimeograph the cutting agent of the stencil is a plate of fine steel, upon which are cut intersecting corrugations, numbering 200 to the inch, thus making a surface of numerous small sharp points. Upon this steel plate, which is imbedded in a table or plate of polished slate, the sheet of prepared paper is placed, and the stencil is formed by writing on the paper over the steel plate with the steel stylus. As the point of the stylus passes over the prepared paper, it presses the paper against the steel plate, and the fine sharp point punctures it from the under side, making a series of minute holes in the lines of the writing.

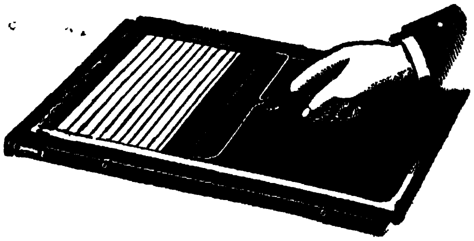


Preparing the Mimeograph Stencil.



Fixing the Stencil in the Frame.

After the stencil has been made in this way, it is placed in the wooden frame of the Mimeograph and kept tight and smooth by a brass frame clamped over it. When this has been done, the frame with the stencil sheet is placed upon the base-board of the Mimeograph, with a sheet of paper upon which a copy is



Printing with Mimeograph Stencil.

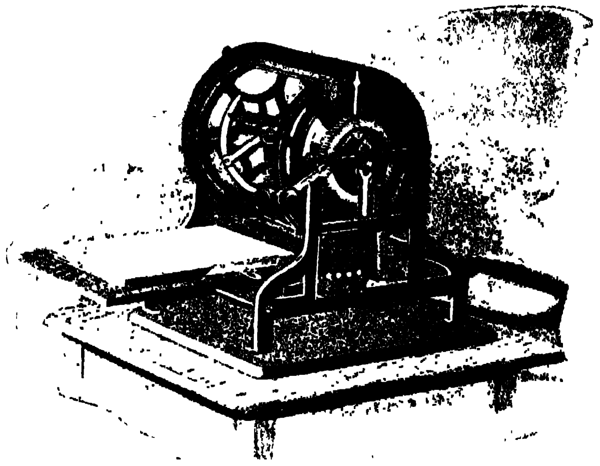
to be printed under it. An ink roller is then passed over the stencil sheet, the ink is forced through the perforations, and a print is obtained. There is practically nothing to get out of order in the Mimeograph, and anyone can produce satisfactory copies with the apparatus. The printing can be done by a small machine or Automatic Mimeograph, instead of a hand Mimeograph, and for those who can afford it, the machine is to be preferred.

The Remington Duplicator is similar to the Mimeograph, so far as the preparation of the stencil is concerned, a stylus and waxed paper being used on a roughened steel plate. Printing is done by inking the stencil in the usual way. The Remington Spring-Frame Duplicator is a new form of the printing apparatus, not superseding the original, but embodying various improvements. Chief among these is a spring stencil-frame, which automatically rises after each impression, thus setting the hand free for the manipulation of the paper and the roller This is a simple device, but it means a great advantage in working, making a difference of from 25 to 50 per cent. in the output in a given time. It also adds greatly to convenience of operation. Various other improvements are added with the same object.

A spring frame, which rises automatically after each application of the roller, is also the feature of Ellam's Patent Self-Rising Duplicator. The stencil is prepared with a stylus, waxed paper and steel plate, as with the Edison Mimeograph.

The feature of Messrs. Zuccato and Wolff's Trypograph is a compact and efficient printing apparatus. The stencil is prepared on the Mimeograph principle, and is then laid upon the top of the printing-box, writing face upwards, and fixed in this position by means of two brass bars held down by hooks. The stencil then lies upon the cover of the apparatus, and the cover itself rests upon a wooden cam. By pulling out the front of the apparatus the position of the cam is changed, and the cover is thus inclined downwards. The paper upon which the copy is to be printed is then placed upon the cover, the front of the box is pushed in, thereby raising the cover to the level of the stencil; the stencil is inked with a squeegee, the ink passes through the perforations, and a copy is obtained. Upon again pulling out the front slightly, the top of the box is inclined downwards, the copy slides off, and another sheet of paper is put on to be printed in the same way. The Trypograph merits attention on account of the compact printing arrangement, which is its distinguishing characteristic.

The Rotary Neostyle is the most ingenious and serviceable duplicating machine that has come under our notice, and it may be unreservedly recommended for use in schools. In design it differs from every other copying machine, and in execution it takes the first place, both as regards the number of copies that can be obtained from one stencil and the rapidity with which they can be produced. The stencil for the Neostyle may be made on the Mimeograph principle, with steel stylus and prepared paper on cross-grained surface, or with a pen similar to the cyclostyle pen. Usually only a narrow strip of file surface is provided, but large plates roughened in the same way are made, and when these are used the objectionable moving up of the stencil paper over the file surface as the writing proceeds is done away with. After the stencil has been obtained it is placed upon an inked pad, lying upon the outer surface of the hollow cylinder shown in the accompanying illustration. The cylinder is perforated like a sieve, and an inked roller revolves on its inner surface, thus keeping the pad supplied with ink. The cylinder is rotated by turning a handle with one hand, while sheets of paper are fed into the machine with the other. A rubber impression roller grips each sheet, forces it against the stencil, applies the necessary even pressure, and, as the cylinder rotates, the printed sheet is automatically discharged. The number of copies printed is recorded automatically by a counter. The continuous action of the machine enables any number of copies to be obtained far quicker than with any other apparatus. Moreover, as the stencil lies upon the pad on the cylinder, it is not liable to tear and crack like one stretched in a frame and inked with a roller or squeegee; hence many more copies can be obtained from it. In fact, as an efficient copying machine, the Neostyle is as perfect an apparatus as could reasonably be desired, and every school in which copies of manuscript or drawings are required should possess one. The cost is naturally a little greater than an ordinary copier, but the investment would never be regretted. Owing to the rapidity with which copies can be obtained, one machine would be sufficient for several stencil plates.



The Rotary Neostyle

Copying machines are in use in many schools, and they ought to be considered as essential a part of the equipment as pens and ink. By means of a good duplicator, examination papers, outline maps, drawings and notices, can be multiplied quickly and legibly, and, with so many excellent labour-saving devices available, it ought not to be necessary for a master to write words, questions or rules upon a blackboard, to be copied (usually with mistakes) by the pupils. When it is realised that a good copying-machine saves time and does away with much tedious labour, it will be exceptional to find a school in which several duplicators are not in constant use.

The Influence of Parents.—Mr. Bryce, M.P., at the recent annual conference of the Parents' National Educational Union said it appeared to him that there are three principal ways in which parents can wisely exert their influence on their children—say, from four to nine years of age. The first is by stimulating the intellectual capacities of the child, and much may be done in this direction by always treating it from the very first as a rational being and endeavouring to satisfy its curiosity in an intelligent manner. Secondly, it is very important that parents shall cultivate in their children a habit of steady attention and, as far as possible, of thinking consecutively. The habit of thinking for ourselves is being much weakened in these days through the many ways in which we allow others to think for us, and that is a danger against which parents must guard in the future. In the third place, vast good may be done by parents in forming and cultivating the tastes of their children, especially the taste for reading. Of course, everything depends on the books selected. Immense good may be done, too, by cultivating in children a taste for the beauties of nature.

EDUCATION IN KIMBERLEY DURING THE SIEGE.

ONE of the schoolmasters of Kimberley has contributed to *The Educational News of South Africa*, for April, a short account of the difficulties of keeping school with hostile armies as near neighbours. The experiences are so interesting that we reprint the greater part of the article in which they occur.

We little thought during our October vacation that the approaching term was to be so harassing, and that we should only be able to put in six weeks' work during two school quarters. Another week and many of us would have been unable to return to duties, owing to the line being cut up and the enemy investing the town.

So early as the Wednesday of that week (October 4th), those in town were disturbed at 1 a.m. by the De Beers hooters shrieking out the first alarm, which, however, passed off harmlessly, and we commenced the term with feelings of restlessness, and uncertainty. During the week our numbers dwindled considerably, and we can but be thankful that many women and children left town just in time to escape one of the most trying experiences likely to occur in any civilised country.

At the commencement of the following week, Kimberley was thoroughly besieged; alarms were sounding every day, and sometimes still more often; parents were anxious to have their children at home, and, on the advice of the military authorities, schools were closed, as it was found that thousands of children let loose during the hurried movements of troops and artillery impeded their movements, and, besides, the little ones were in great danger themselves.

However, after a fortnight's comparative quiet, and, seeing that the town had not been shelled, it was decided to re-open. The hours were generally altered to from 8.30 a.m. to 1 p.m., in order to enable the scholars to dine with their parents, and thus save fuel, &c. The week passed quietly, and teachers and scholars were gradually settling down to work in the peculiar circumstances.

Then came Friday (November 3rd). Few of us will ever forget that day. At 10 o'clock the hooters disturbed our peaceful lessons, and in a few minutes the elder scholars were hastening homewards, and the teachers to the redoubts. Not so the poor little mites in the Kindergarten. They could not be allowed to run home, with the streets crowded with rushing cabs, cyclists, and horsemen, and the artillery and regulars hurrying to take up their appointed stations. Parents who could not come themselves sent their native servants for Mary or Willie, in a school where there were possibly a dozen of that name. Nevertheless, teachers are accustomed to difficult situations, and eventually all the children were safely dispatched to their homes.

As it was unwise to continue school, those teachers who had not already taken up arms to defend their homes and families now took the earliest opportunity of doing so, and all, from our energetic inspector to the humblest assistant, donned the khaki, and handled the rifle instead of the chalk. Not to be behind in usefulness, the lady teachers hastened to qualify for ambulance work, or offered their services in the distribution of milk, &c.

Strange how one gets accustomed to circumstances! On November 27th it was decided to make another attempt to start work, and this time so successfully that most schools remained open until we "broke up" for the Christmas holidays (?). Everything considered, the attendance during this month may be considered "fair." Not so the general advance in knowledge. How could a child be expected to learn, when from 6 a.m. he or she had been crowding round the butcher's for meat, or often vainly striving to obtain a tickey's worth of vegetables, and then hurrying to school after breakfasting on a slice of "bread and scrape" or a plate of mealy pap? Besides, the teacher had come straight from the redoubt, after turning out at 3.30 a.m to welcome his "brother Boer," drilling later from 6 to 7, and frequently doing four hours "sentry go" during the night. Try it, fellow-teachers, and you will find that that is not conducive to educating the young. It is an experience which none of us wish to pass through again.

When "Relief" came and the line was re-opened, towards the end of February, parents, scholars, and teachers found that a change was absolutely essential, and, as the larger schools were temporarily turned into military hospitals, it was generally decided to commence work again on April 2nd. Even then several teachers were unable to return, as they were still on the sick list, owing to the effects of disease and famine. Both St. Michael's and St Cyprian's have closed until July, and several private schools have done likewise; but the public schools are now settling down to a full term of hard work, with the aim of making up for time lost during the siege.

ITEMS OF INTEREST.

GENERAL.

THE last day on which essays can be received for the Prize Competition announced in our last issue, particulars of which are given on page 239, is Saturday, June 9th. We hope a large number of teachers will set the proposed subjects to their forms, and forward the essays written in class to us to participate in the competition. The importance of practice in composition has led us to offer two extra prizes, to be placed at the disposal of the master or mistress from whose form the prize essays are received, for distribution in the way the teacher thinks best calculated to encourage essay writing.

WE publish this month a set of revision test papers on the most largely taken subjects of the Oxford Senior Local Examinations. These questions will provide teachers with a means of subjecting the candidates who are to be presented in July next to a preliminary test, and in this way to discover weak points and the parts of the subjects which it would be well to revise before the actual examination takes place. We are prepared to supply copies of the questions in a form suitable for distribution in class on the terms mentioned at p. 230. Copies of the Junior and Preliminary papers which have hitherto been published can also be obtained.

THE Paris Exhibition will, it is expected, attract a large number of teachers, more especially, perhaps, as so much care has been bestowed upon the educational section, which not only includes exhibits concerned with every phase of teaching work, but a series of conferences in which distinguished educationists of nearly every nationality will take part. We hope next month, in an article by a well-known writer and schoolmaster who has examined this section with great care, to give our readers some idea of the scope of the part of the exhibition devoted to schools and school-work.

To facilitate the arrangements which managers of science schools and classes may have in contemplation, the Board of Education have published in advance the more important changes which will be incorporated in the forthcoming Science and Art Directory for the session 1900-1. The memorandum of the alterations is referred to as Form 957, and may be obtained on application to the Secretary, Board of Education, South Kensington, S.W. This plan of procedure, adopted this year for the first time, will be widely appreciated.

THE tone of the debate in the House of Commons on May 3rd, on the new Education Code, and on the minute of the Board of Education dealing with higher elementary education, together with the result of the vote on Mr. Hutton's amendment to Prof. Jebb's motion expressing approval of the proposals contained in the Code and minute, leads to the conclusion that both the block-grants and higher elementary schools are to all intents and purposes established. It is very unlikely that a second opportunity for discussing the questions raised will follow the adjourned debate of May 3rd.

SEVERAL of the arguments used by Prof. Jebb in his exhaustive speech indicate what is likely to be the view taken by the Government when the question of defining the limits of elementary and secondary education has to be decided. Said Prof. Jebb, the difference between primary and secondary education does not depend chiefly on the subjects taught, but rather on the aim of the school and on the general character of the instruction given. Primary education is, broadly speaking, that planned for a leaving age of 15 at the latest. In secondary education there are two main classes of schools: (1) those in which the leaving age is 15, 16 or 17; and (2) those in which it is 18 or 19. A child in an ordinary elementary school has, or should have, three choices open to him (*a*) to stay in that school till he has completed the standards; (*b*) after passing Standard IV. to pass to a higher elementary school; (*c*) to pass to a secondary school at the same break. The higher elementary school set up by the minute answers to the second of these choices. It is to be, said Prof. Jebb, a higher primary school and not a lower secondary school, and so its course is planned to end at the age of 15 at latest. But, we must confess that we fail to understand the argument with reference to this limit of 15. Why not 16 or 17, if the child's parents are ready to make the necessary sacrifices to keep him at school? If the difference between elementary and secondary education depends upon the aim and character of the teaching and training imparted, the presence of children of 16 in higher elementary schools will not convert them into secondary schools.

JUDGING from Mr. Chamberlain's letter to the Birmingham branch of the National Union of Teachers, the Higher Elementary Schools described in the recent minute of the Board of Education are not intended to replace the existing Higher Grade Schools. Both kinds of schools are to be allowed side by side; and, moreover, it seems there is nothing to prevent such higher schools being held in conjunction with ordinary elementary schools. If Mr. Chamberlain's letter is to be regarded as an official interpretation of the minute, certainly "things are not what they seem."

DR. S. S. F. FLETCHER is this term giving a course of lectures on "Some Modern Educational Reformers and Systems" in connection with the Cambridge University Teachers' Training Syndicate.

THE authorities of the Cambridge University Day Training College propose, if a sufficient number of students offer themselves, to arrange a course of lectures on "The Principles and Methods of Education," during the latter half of July and the beginning of August. The course will commence on Monday, July 16th. Opportunities of teaching under supervision will be afforded to those students who desire it. The work will, together with the educational section of the University Extension Summer Meeting, form a six weeks' course for teachers. The fee will be £6 6s., including the right to attend *all* the lectures of the Extension Summer Meeting. Applications should be addressed to the Principal, Mr. Oscar Browning, M.A., King's College, before June 9th, 1900.

THE programme of the summer meeting to be held at Cambridge on August 2nd to 15th, and August 15th to 27th, has just been published, and may be obtained from Dr. R. D. Roberts, Syndicate Buildings, Cambridge. Summer meetings are not regarded with particular favour by teachers who have worn themselves out with the routine work of forms, but the forthcoming meeting at Cambridge offers such exceptional opportunities for obtaining a concise statement of progress in most branches of knowledge during the present century, that every teacher wishing to put himself in touch with what has been accomplished would find the few days occupied by the meeting pleasantly and profitably spent. The lectures on the different aspects of history, literature, science, theology, education and biography will all be delivered by distinguished thinkers. In addition to lectures, meetings will be held for the discussion of special questions, and practical science courses have been arranged. Of special interest to teachers is the practical course on geography in its physical aspects, designed to illustrate the principal points in the new schedule of physical geography for the Cambridge Local Examinations. In connection with this subject, Professor W. M. Davis, of Harvard University, will deliver a course of lectures. It is proposed to make an excursion for the purpose of observing the river system of the Fen country, and to repeat the famous Bedford Level experiment to demonstrate the curvature of the earth's surface.

THE Gilchrist Trustees have given to Bedford College, London, the award of a travelling studentship to be competed for by former students of the college who hold a teacher's diploma, and have had two years' experience of teaching. The Council will shortly announce the subjects proposed for investigation. Applications should be made not later than December 1st, as the award will be made at the end of that month. Three free studentships to the value of £46 annually are offered to the female students taking the highest place in the first division of the Oxford and the Cambridge Senior Locals, and the Honours Division of the London Matriculation. The free studentship offered on the result of the Cambridge Senior Local is tenable for three years, and the others for two years. All further information about these scholarships may be obtained from the college.

THE Rev. E. F. MacCarthy, Headmaster of Five Ways' Grammar School and Chairman of the Birmingham School Board, contributes to *The Contemporary Review* for May an able article on "The New Code." The defects of the code are, in Mr. MacCarthy's opinion, that the conditions under which the Block-Grant is made—(1) weaken, instead of strengthening, the control of the Education Department over school managers; and (2) lessen, instead of increasing, the influence of Parliamentary and general public opinion upon the condition of the schools. The Board of Education has an effective enough control over the teachers of public elementary schools through the system which dispenses with the annual inspector's examination in the case of highly efficient schools, for if the school shows any signs of falling off, the examination can be re-imposed, and it can be placed back again on the list of annually-examined schools if its inefficiency continues. Schools which continue year after year on this list of annually-examined schools may be considered continuously inefficient. To ensure a more complete control over the managers of schools, Mr. MacCarthy advocates a system of small fines, which must fall on the managers, and not on the teachers, for observable neglect of necessary requirements, or omissions in curriculum.

IN a vigorous contribution to *The Humanitarian* for May, Dr. H. Laing Gordon urges the necessity of paying more attention to the physical education of boys and girls attending public elementary and small middle-class schools in towns. Drill and physical exercises are not enough; what is wanted in addition is the spontaneity, the freedom, and self-help of games which have exerted so beneficial an effect upon the physique and character of the public school boy.

THAT interesting little quarterly, *Child Life*, continues to provide kindergarten teachers with an abundance of bright and instructive articles concerned almost entirely with the special peculiarities and requirements of young children. Professor Earl Barnes, who, as everybody knows, is an enthusiastic lover of children, contributes to the last issue a paper on "Freedom in Education." Probably few form masters will find themselves in sympathy with all the principles stated by the professor. The following, for instance, put the teaching of spelling in an unfavourable light. "The boy who learns that *l-a-m-b* spells *lam*, but that *r-a-m-b* does not spell *ram*, that *receive* is spelt with an *ei*, but that *believe* is spelled with an *ie*, is undergoing a discipline under which his honesty of personal conviction, his trust in his own personal judgment, and all the other qualities on which originality rests, must be crushed out."

THE annual celebration of Presentation Day at the University of London was held this year for the first time at the new University buildings, South Kensington. The Prince of Wales attended and handed the gold medals to those who had won them.

THE last report of the Charity Commissioners for England and Wales deals with a number of schemes under the Endowed Schools Acts. One of these is the scheme for the amalgamation of the Southwark Foundations of St. Olave's Grammar School, St. Saviour's Grammar School, St. John's, Horsely Down, Girls' School, and other local educational charities, the principal result of which will be the establishment of a first-rate girls' school for this important district. Several cases of peculiar difficulty have been settled, some of which had been for a long time the subject of anxious negotiation; such, for instance, as the schemes for Bury Grammar School and the Hulme Trust Foundation, for the educational portion of the Ewelme Almshouse Charity, for Colchester Grammar School, for Stockton-on-Tees Blue Coat (now Grammar) School, for Cranbrook Grammar School, for Newton-with-Scales Hornbie's Charity, and for the amalgamation of Thornton Dale, Lumley's Endowed School, with the Pickering Free Grammar School. The placing of county council representatives on the governing bodies of schools has been effected by amending schemes for six cases in Cambridgeshire, six in Dorsetshire, six in Warwickshire, and five in Westmoreland. The amending scheme for Burnley Grammar School is an instance of the cordial co-operation which has existed between the Commissioners and the Science and Art Department.

A CONFERENCE of representatives of the Lancashire boroughs, with the exception of Manchester and Oldham, was recently held at Preston to consider a scheme for the general organisation and control of secondary education. The principal object of the proposals is to secure that such control, so far as secondary education is provided or assisted out of public funds, shall be placed in the hands of an independent body on which all those directly connected with elementary, secondary, technical, and University education are substantially represented, whilst at the same time the ratepayers have a predominating representation.

As is amply shown by their last report, the majority of the members of the Technical Education Committee of the Derbyshire County Council believe thoroughly in the value of secondary education. We find that during the year dealt with (1898-99) the new laboratories and manual instruction room at the New Mills School of Science have been completed, equipped and formally opened. Substantial progress has been made with the new buildings at Chesterfield and Staveley Grammar Schools, and a manual instruction room is being erected at Dronfield Grammar School. The reports of the inspectors show that the work being done in the five schools of science, which are largely indebted to the County Council for their existence, is of a very satisfactory nature.

THE Technical Education Committee of the Durham County Council, in awarding grants to the evening classes throughout their area, rely upon an extensive system of inspection instituted for the purpose. Throughout the session 1898-99 no fewer than 693 surprise visits were paid by the twenty-four inspectors of the committee. It is believed that the efficiency of the teachers and the instruction they give is in this way most satisfactorily gauged, but it seems a large staff to employ for the purpose.

THE amount of aid given to secondary education in the county of Durham by its County Council is unusually large, a quarter of the whole amount of money at their disposal for the purpose of technical instruction being employed in this way. It is not surprising, in the circumstances, to learn that the number of scholars over twelve years of age in recognised secondary schools has grown at the rate of seventy-four per cent. in seven years. Of the 1,350 boys and girls on the books of these secondary schools, 872 are earning grants awarded by the County Council.

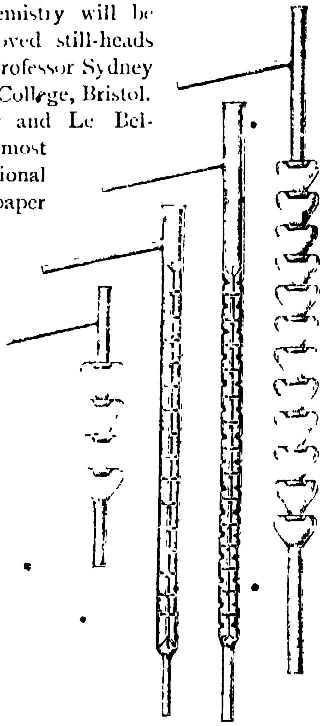
THE total number of candidates who entered for the Junior Commercial Certificates of the London Chamber of Commerce was this year 151, as against 171 in 1899. But while last year 1,550 papers were worked by the 171 candidates, the smaller number of candidates of 1900 sent in 2,089 papers, from which it would appear that the number of subjects which must be offered by candidates for a Junior Commercial Certificate is not in excess of their ability. The apparent falling off this year in the number of candidates is accounted for, we learn, by the fact that the examination being held in April instead of July allowed only nine instead of twelve months for preparation. It is satisfactory to know the London Chamber of Commerce have recently received the names of additional firms who promise to give preference in making appointments to the holders of these commercial certificates, providing that the candidates' qualifications are equal to those of their competitors.

AT the Private Schools Association Conference, held at Oxford during the last week of April, the probable effects of the Board of Education Act were discussed. After a speech by the President, the Rev. J. B. Blomfield, a resolution was unanimously adopted "that in the opinion of this meeting it is a matter of national importance that the new Act should be administered so as not to imperil the existence of efficient private schools."

THERE is still need to insist upon the value of education to the working man. Some of them are yet sceptical of the benefits accruing to children by attendance at school. The Council of the Association of Textile Factory Workers, which may be said to express the views of the whole of the operative classes in the cotton industry, recently passed resolutions disapproving of the attempt, in the Bill before

Parliament, to raise the age of full-timers from thirteen to fourteen, the penalty for non-attendance from 5s. to 20s., and the number of attendances per year from 250 to 350 before the standard of efficiency is reached.

THE Department of Pedagogy of the University of Chicago are issuing a series of papers describing the work of the elementary school in connection with the University. The reports will all deal with the general principles upon which the work of the school is based and provide working details of the course of instruction. The problems taken up in the school represent the practical needs and difficulties felt by every teacher and parent who is in intelligent touch with current effort, and the papers, when complete, will give a full account of the results reached in the four years of the school's life. The special, and perhaps unique work of the school, is the plan by which the organisation of the study of cooking and the manufacture of textiles has been effected. Not only has a proper technical sequence been aimed at, but the relation of these practical subjects with the ordinary teaching of history, science, numberwork and art has been carefully thought out by the teachers. The monographs will be brought out with Dr. Dewey as editor-in-chief and Miss Laura L. Runyon as managing editor.



TEACHERS of practical chemistry will be glad to hear of some improved still-heads which have been designed by Professor Sydney Young, F.R.S., of University College, Bristol. For many years the Glinsky and Le Bel-Henninger forms have been most commonly employed in fractional distillations, but a recent paper of Prof. Young's to the Chemical Society demonstrates the superiority of the still-heads designed by him and shown in the accompanying illustration. These "rod and disc" and "pear" still-heads will doubtless become popular because of their simplicity, their better suitability for the distillation of small quantities of liquid, and the fact that after the distillation is stopped the liquid returns almost completely from the still-head to the still. They can be obtained from Messrs. John J. Griffin & Sons, Ltd.

THE Civil Service Commissioners announce that the annual open competitive examination for admission to the Civil Service of India, for Higher Division Clerkships in the Home Civil Service and for Eastern Cadetships will commence on August 1st, 1900. The last day for the receipt of entry forms by the Secretary, Civil Service Commission, S.W., is July 2nd. Candidates may compete for any or all of the services on payment of a fee of £6. The limits of age are:—for the Indian Civil Service 21 and 23 on January 1st, 1900; for the Home Civil Service 22 and 24 on August 1st, 1900; and for Eastern Cadetships 21 and 24 on August 1st, 1900. The subjects of examination embrace those branches of languages, mathematics, natural science, history, philosophy, politics and law, which are generally included in a university curriculum, and the standard of the papers may be roughly described as equivalent to those set for degrees in honours at the older English universities. Successful candidates for the Home Civil Service and Eastern Cadetships are appointed shortly after the result of the examination is announced, but the selected candidates for the Indian Civil Service, before proceeding to India, are on probation for a year, at the end of which they have to undergo a further examination in one of the Indian vernacular languages and in Indian law.

FIFTY candidates for the Indian Civil Service will be selected, if so many shall be found duly qualified at the examination. The number of candidates to be selected for Eastern Cadetships is at present ten. Though at present no vacancies in the Higher Division of the Home Civil Service have been notified, it should be remembered that, out of the list resulting from each examination, there are filled (provided there be candidates duly qualified):—(*a*) all the vacancies in Class I. which have been reported to the Civil Service Commissioners up to the date of the announcement of the result of the examination; (*b*) any additional vacancies, occurring within six months from the date of the announcement of the result of the examination, which the head of the department may desire to have so filled. During the last few years a considerable number of candidates, though comparatively low on the list, have obtained appointments through the occurrence of vacancies in the six months subsequent to the announcement of the result of the examination.

THE Civil Service Commissioners announce that an open competitive examination for not fewer than three junior appointments in the Supply and Accounting Departments of the Admiralty will be held in London, Edinburgh and Dublin, commencing on June 26th, 1900. The limits of age are 18 and 20. The examination will be in the following subjects, viz.:—*Class I.*—Mathematics I. (elementary, including arithmetic), Latin, French or German, English composition and geography. *Class II.*—Mathematics II. (advanced), German or French, Greek, English history, chemistry and heat, physics, physiography and geology. All the subjects of Class I. may be taken up; but only two of the subjects of Class II., and if one of these subjects be a modern language it must be different from that selected in Class I. No candidate will be eligible who fails to pass a qualifying examination in arithmetic and English composition. The salary attached to these appointments will commence at £100 a year, and, after the probationary period has been served, it will be raised to £120, and progress, by yearly increments of £10, to £200; and then, by £15 a year, to a maximum of £350. Assistants are eligible for promotion to higher appointments as vacancies occur in their respective departments. Entry forms, obtainable from the Secretary, Civil Service Commission, S.W., must be returned on or before June 12th, 1900.

WELSH.

AT the last half-yearly meeting of the Central Welsh Board letters were read from the Carmarthenshire County and Brecon local governing bodies recommending that cadet corps should be established in the Welsh county schools. It was, however, agreed, on the motion of Mr. J. Issard Davies, M.A., that the letters should lie on the table, because the country was not in a proper condition to consider anything of this kind.

IN the draft report of the Central Welsh Board to the county governing bodies attention was called to the fact that the recognition by the Board of Education of higher elementary schools, in which children might be educated up to the age of fifteen, might give rise to serious overlapping between these and the lower forms of the existing intermediate schools. It is hoped that the Board of Education and their inspectors will be alive to the danger, and that higher elementary schools likely to have this effect may not have their approval. The Board passed the following resolution:—"The issue by the Board of Education of this minute may have a very important bearing upon the work of the Central Board; they hope that, in the constitution of the Consultative Committee, adequate representation will be given to the Central Board, and that in all matters affecting Welsh intermediate education the special knowledge and position of the Board will not be ignored."

APPARENTLY only one intermediate school in Wales was last year examined by the Central Board in agriculture, and in the reports of the examiners the remark occurs that the time given to it would be more profitably spent in the study of one of the natural sciences. Mr. Issard Davies rightly maintains that, instead of discouraging the study of this subject, the Board should insist upon its being taught in rural districts. Principal Reichel, while differing from Mr. Davies as to the advisability of teaching an applied science such as agriculture, said he would like to see a committee appointed for the express purpose of considering how far the subjects taught in rural schools could be made more suitable to the needs of a rural population, consistent with educational efficiency.

AT the last annual meeting of the Guild of Graduates, held at Cardiff, the question of a University Settlement was discussed. Unfortunately no representatives from the University College, Bangor, were able to attend, and it was decided to take no definite action without the concurrence of representatives from each college. A committee was formed to draw up definite proposals to be discussed at a later conference.

THERE was a deficit of £188 involved in the work of the University of Wales for the year ending March, 1900. But this includes a smaller deficit carried forward from the previous year. The total expenditure for the year was £4,737. A sum of £5,000 has recently been left to the University for the purpose of founding scholarships at Bangor and Aberystwyth.

SCOTTISH.

THE opposition to the Higher Education Bill is steadily growing. The rating clauses have come in for almost universal condemnation from town and county councils, and without rating clauses there is little of importance left. Educational bodies have approved the measure as a whole, and have refrained from destructive criticism save as regards the farcical appeal to the Education Department. The opposition seems to have affected Lord Balfour, who has stated publicly that he is afraid the Bill will not be passed this session. Firm treatment would probably show, as in the case of the new English code, that this opposition was largely *vox et præterea nihil.*

THE Association of County Councils have approved of the following resolutions regarding the Education (Scotland) Bill:—(1) That the rating clauses should be eliminated from the Bill, and that to provide the funds proposed to be raised by rating there should be substituted clauses directing that a proportion, not exceeding one-fifth, of the Local Taxation (Scotland) Act, 1892, should be ear-marked and handed over to the Higher Education Committee for educational purposes. (2) That provision should be made in the Bill for the appointment of a Central Committee on Agricultural Education to advise and assist the Department in stimulating and directing agricultural education, and that power should be given to the Secretary for Scotland to appoint a similar committee for any other branch of education.

THE Scottish Modern Languages Association have issued a circular to the principals of higher class schools, and to the teachers of modern languages, asking their assistance in preparing a census of the different text-books used in Scotland for the teaching of modern languages, and in obtaining statistics with regard to the number of hours per week devoted to French and German respectively. Statistics of the kind contemplated have been taken in Germany, generally appearing in "*Die Neueren Sprachen*," and have proved of the utmost value to teachers. Such information, it is held, is specially necessary in this country, where the want of well-equipped school libraries makes it difficult for the teaching profession to ascertain what text-books are in general use and what proportion of time is generally allotted to modern languages.

THE Education Committee of the International Exhibition to be held in Glasgow next year are arranging a systematic and complete exhibition, illustrating the various phases of educational work in Scotland. A sub-committee has been appointed to collect suitable material from primary and secondary schools. The exhibits are intended to illustrate the following features, viz.:—(*a*) Accommodation and Equipment of Schools; (*b*) Constitution and Organisation; (*c*) Class-room work of pupils; (*d*) Manual work of pupils; (*e*) Special work of pupils. Coloured diagrams and graphic representation of the progress and present condition of primary and secondary education in Scotland are to be an important feature. The committee will be pleased, we understand, to receive suggestions from teachers.

THE Higher Education Bill for Scotland was read a second time in the House of Lords on May 10th.

IRISH.

THE new buildings of Alexandra College, Dublin, were formally opened by the Princess Christian during the recent visit of the Queen to Ireland. Speeches were made by the Lord Lieutenant, Lord Cadogan, the Archbishop of Dublin and Mr. Lecky, M.P. It was announced that £2,000 was still wanted to make up the amount required for the buildings. The College was founded in 1865 and has done most valuable work in the higher education of women in Ireland.

THE National Board, as part of their new scheme, are about to appoint an Organiser of Elementary Science in the Irish National Schools, at a salary of £500 a year with travelling and other allowances. They are also appointing work-mistresses at £150 a year with travelling and personal allowances, and teachers of Domestic Science at £80 a year with the same allowances.

A JUSTIFIABLE disapproval is felt that the Board have instituted a most extensive series of reforms without consulting the managers or teachers likely to be vitally affected by them, and without previously publishing their scheme to give time for its discussion and the suggestion of alterations. Great dissatisfaction is also expressed by the authorities of the Protestant hurch at the announcement that in future no school will be included in the national system and endowment which has a smaller number of pupils than 25. At present, schools with half that number are sometimes accepted, and the new rule will cut out a large number of small Protestant schools; thus, in districts where there are very few Protestants leaving only atholic schools which Protestant children can attend. In some northern districts the case would be equally hard for Catholic children. A considerable agitation is being raised on he question.

The Bill to empower the Intermediate Board to introduce heir new scheme has at last been introduced into Parliament. The Board are still, however, delaying the issue of their Rules and Programme for 1901, hoping to be able to nclude some of their proposed changes in them, although the usual date of the publication of the Rules is the end of March. It is doubtful if there will now be time to allow of changes being announced for 1901, as a sufficient interval must be given to the schools to prepare for them.

THE number entering for the Examinations of the Intermediate Board for this year (which begins on June 11th), is slightly less than that of last year, being for boys and girls 8,285, as compared with 8,395 in 1899.

CURRENT HISTORY.

IN the Middle Ages people helped themselves to believe in the "wickedness" of the Jews, whom they constantly persecuted, by the circulation of stories to the effect that Jews were in the custom of killing Christian boys. The most popular form of the story was that they captured a boy a little before Easter and on Good Friday put him to death by crucifixion. The first of such acts is alleged to have happened at Norwich in Stephen's reign, the hero-martyr being canonised as St. William. But the most famous of such boy martyrs was S. Hugh, of Lincoln (not the Bishop of the same name and diocese), who "was martyred" in 1255. And another such story is the subject of the "Prioress' Tale" in Chaucer. Such superstitions (for there is no basis in fact for any of these stories) seem to have died out in the land of their birth, but on the Continent they have survived to our own day. Not only among the illiterate peasantry does this occur, but so great is the anti-Semitism of some countries that we have the other day, in the Diet of Lower Austria, the following incident reported in the papers:—"Herr Schneider introduced a motion calling on the Government, in view of the approaching Jewish Easter, to place the rabbis and butchers under strict police supervision, as it had been proved by numerous instances that the Jews required Christian blood for the celebration of their Easter festival."

THE discussion in and out of Parliament that is going on in our own days concerning the water supply of London and its ownership reminds us naturally of some of the early endeavours to supply London with the "element" necessary for drinking, washing and the extinction of fire. Specially do we think of Peter Morice, the Dutchman, who in 1582 astonished the Londoners by pumping water for them out of the Thames; but, above all, of Hugh Myddelton, goldsmith, who, in spite of much opposition and with many difficulties, succeeded in James I.'s reign in bringing water from Hertfordshire for a continuous supply to the growing metropolis. It is the fashion to think of James I. as a foolish monarch, but he was wise enough to help Myddelton financially, and fortunate nowadays is the possessor of a quarter, or even an eighth, of a king's share in the New River Company. Dr. Smiles, who tells the story of these early ventures in his "Lives of the Engineers" (an excellent set of five volumes, by-the-bye, for the school library), estimates the present worth of a whole share at £17,000.

THE QUEEN has been to Ireland. It is not often that the Sovereign of England has found the time to visit the "sister island." George IV., of unblessed memory, won himself a place in the hearts of his Irish subjects by being the first of the House of Hanover that ventured across. At one time in our history there were two "Kings of England" in Ireland at the same time, and they met at the battle of the Boyne. But that was at a period when fears of an Irish invasion were never out of the minds of Englishmen, and it was apparently necessary that, if England were to have her "liberties," Ireland must be deprived of hers. Going further backward in our history, we find that, though the Tudors were constantly interested in the country, and have each left their mark for good or evil there, none of them visited Ireland. But we remember two "Plantagenet" kings who knew Ireland from personal knowledge. John was sent there by his father to receive the homage of the chiefs, and Richard II. was in the country putting down revolt when he was recalled by news of war that ended in his deposition.

THE SCHOOL PULPIT.

NOTABLE PASSAGES FROM SERMONS PREACHED IN PUBLIC SCHOOLS.

Making Public Opinion.[1]

"*Ex Quercu, non ex Salice.*"

I HAVE just been saying that Christ was popular up to a point. But Christ was unpopular also. Consider why.

Well, three reasons. (1) *He told them the Truth.* "Now ye seek to kill Me," He said, looking them in the face, "a man that hath told you the truth." (2) *They feared Him.* Yes, for all He was gentle as a nurse and tender as a woman to the weak. They could not meet His eye, or forget His condemnations. (3) *He broke some of their cherished traditions.* He put their Sabbath on one side, and broke in little bits their rubbish about *Corban.*

And the Christian man will have to be unpopular also in certain ways. For (1) he does not call ugly sins by easy names. He does not hold his tongue in the railway-carriage when God's name is taken in vain. And men do not like such plain speaking. And (2) he is feared in a sort of way too. He will not let another do what is vile and wrong, however old a friend he may be. He is no respecter of persons. He cares for nothing and nobody when God's honour is at stake. Like Sir Henry Lawrence, he "fears man so little, because he fears God so much." And men are afraid of a man like that, even though they do the same construe, and play in the same Eleven with him every day, and know that he is generally a good sort. (3) And so he, like his Master, will break the bad traditions of the world. There is a "thieves' honour" at some schools, and he will have nothing to do with it; extravagance at some colleges, and he always spends money as if God will see the account.

There are boys here who are pretty sure to be popular at school and college. And there are others (and perhaps some of these will make the greater men) who will be thought feeble and quiet so long as they are at school. But both alike will sometimes have to be "fools for Christ's sake": will have to be unpopular in some of the ways in which Christ was unpopular.

Public opinion—it is a great thing; but it is a dangerous thing too. I believe that every year the public opinion at the big schools of England is getting more and more Christian. But there will always be plenty left to fight against. The Devil is not dead. Up to a certain point the public opinion is a help; but it is always very jealous of anyone going beyond it.

When I went to my big school the public opinion was in favour of a fellow saying his prayers. But it was against his setting up to be extra religious by reading his Bible. I can remember when I was in the lower school listening to an account some upper school boys were giving of how they had climbed up to the study window of a boy who was suspected of reading his Bible, and caught him at it! What a tyrant this public opinion is! and it will never be so hard to fight as at school. But resolve that you will *make* public opinion, and not *follow* it.

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[1] From a sermon preached to the boys of Aysgarth School by the Rev. C. H. Boutflower, chaplain to the Bishop of Durham. Extracted by permission from "Eight Aysgarth School Sermons." (Macmillan.) 1900.

Any fool can follow public opinion. Any fool can do what is popular when someone else has set the fashion: can go like sheep do through a gap one after the other, when someone else has broken through the hedge first. But it takes a *man* to say, like Nehemiah, "So did not I, because of the fear of God."

And it is possible to *make* public opinion. When I first went into the upper school, I read my Bible a bit, but in a stealthy sort of way, taking care to see that the study door was bolted before I began. But a few years later I can remember seeing on a summer Sunday afternoon a group of VIth form boys under a tree in the garden openly reading the Bible together. And if the VIth did it there was no longer anything to make it hard for the smaller fellows, who might have promised their father or mother at home to do the same. I have a letter still, from a fag, who wrote that as eight of them wanted to read together, and the studies were only six feet square, they didn't know how to manage!

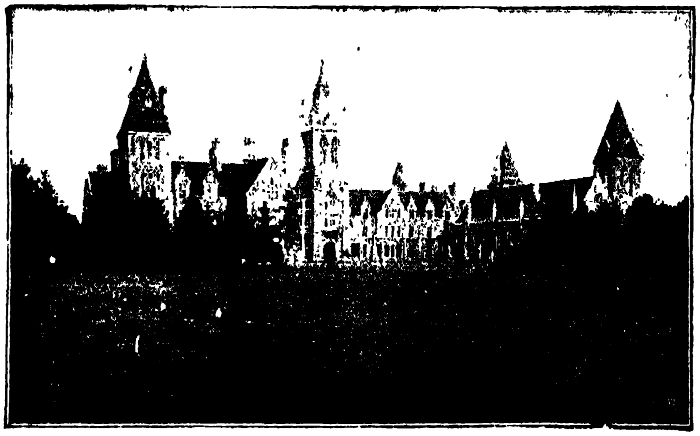
That was a big change of the public opinion, was it not? And what made it? Who touched the spring? I will tell you how it was. One night the captain of the school looked over his "partition" and saw a fag in the cubicle next to him reading an unmistakable Bible. Next day he said, "Look here, young E——, do you read your Bible at night?" The fag confessed, and on cross-examination fancied he knew two other chaps who did. The end of it was—no, not the end, but the next thing—that he was invited with his two chums to read it in study on Sunday nights with the captain of the school, who up till then had thought that he was alone in this curious habit. So it may have been a VIth form boy that changed the public opinion, but it was a fag who touched the spring.

A GUIDE TO CHARTERHOUSE.[1]

CHARTERHOUSE experienced many changes during the interval from the time the school was opened, in July, 1614, "with a schoolmaster, usher and thirty-five scholars," until it was transferred to its new buildings at Godalming on Waterloo-day, 1872. But Mr. Tod disposes of all this history in twenty pages, his object being to describe the work of the modern school, its games and the customs of its boys. Still a glimpse is obtained of Thomas Sutton, of "ancient and respectable family," the founder of the school; and there is a mention of the fact that Steele, Addison, Wesley, Havelock, Thackeray, are, with many other honourable names, to be found on the roll of old Carthusians.

The author seems to have always kept in mind the objects of the publishers in bringing out this new series of handbooks to the great public schools, for throughout the information offered is of that practical kind so dear to the British parent, when he has the difficult task of selecting a school for his own particular paragon. Indeed, if the forthcoming volumes preserve the same characteristics the public will soon be in the possession of a set of educational "Baedekers." And they will, too, be sumptuous guide-books to English public-school education, for the volume before us is nicely bound, beautifully printed and lavishly illustrated.

THE REV. G. H. RENDALL,
Headmaster of Charterhouse School.
(From a photograph by Messrs. Russell and Sons, Baker St. W.


CHARTERHOUSE: FOUNDER'S COURT,
Which forms the Front of the School Buildings.

Mr. Tod has a gratifying story to tell of the improvements in its tone and ways of life which have taken place since the transfer of the school to Godalming. "In 1872, and during the last years at old Charterhouse, to work was almost a crime," but at the time of the change "the authorities made it quite clear to even the dullest that persecution of a new or young boy, merely because 'he got up in form,' would meet with no mercy, and that if the worker were molested, the school would soon dispense with the presence of those who molested him." The grosser forms of bullying have been suppressed or have died out, and a number of barbarous customs have completely disappeared. Of these latter ceremonies "lemon-peel fight" and "pulling-out" are described at some length, but we must be content to refer the reader to Mr. Tod's account of them. The powers of monitors were placed on a most satisfactory basis in 1874, and the five rules regulating monitorial discipline then drawn up are still in force. As in most other schools, too, the relations between boys and masters have been at Charterhouse, by gradual steps, improved until no part of a boy's life at school is considered outside a master's province. One indirect result of this enlargement of the master's sympathies has been the change which has come over the provisions for the employment of leisure hours. Mr. Tod says that nowadays a boy's command of his leisure is gone. Yet there is a grave reason to fear a serious loss of initiative and originality of character when a boy has no time to call his own, in which he can do something to work out his own salvation. Anything but this and the realisation of a common taunt that public schools are "the home of the common-place!"

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[1] "Charterhouse." By A. H. Tod, M.A. xii. + 241 pp. (George Bell & Sons.) 3s. 6d.

Nearly a third of the book is given to a consideration of the games of the school, a fact which indicates the importance of athletics in a public-school education. In addition, the questions of expenses, scholarships, clothes worn, and so on, are duly considered.

We have only been able to call attention to a few interesting points in this pleasantly-written book, but for the purpose for which it is intended we consider it is eminently suitable, and it should gain a wide popularity.

RECENT SCHOOL BOOKS.

Modern Languages.

An Elementary French Grammar. By G. F. Fasnacht. vi.+107 pp. (Macmillan.) 1s. 6*d.*—This convenient and well printed little book is clearly the work of an experienced teacher, and has been compiled with great care. It will be found very suitable as a book of reference for intermediate classes. An index might be added with advantage.

Some Familiar French Phrases in Every-day Use. By Rev. L. H. Pearson. 29 pp. (Relfe Brothers.) 6*d.* The author has apparently been accumulating for some time past a collection of sentences in which his pupils usually went wrong, and he has issued them in the form of a little book. There are some 150 short sentences, the English and French being in parallel columns. Occasionally the sentences appear rather trivial, *e.g.*, "He is right, but I am wrong. You drink good wine, red wine." (Where is the connection?) Other sentences are distinctly up-to-date, as "Conquer or die! exclaimed Marshal Roberts."

Goethe's Poems. Selected and edited by C. Harris. xvii+286 pp. (Isbister.) 3s. 6*d.*—This is a volume in Heath's excellent Modern Language Series. The introduction is rather sketchy and not too well arranged; more than six pages should have been given to a discussion of Goethe as a lyric poet, with fuller details of his life. Far better is the introduction to the Vienna edition of selected poems by Goethe, annotated by Ludwig Blume. The text appears to be carefully printed, and the notes have been compiled conscientiously; the English in which they are written is often clumsy and inelegant. The frontispiece is a poor woodcut of the Stieler portrait.

Isolde Kurz, Die Humanisten. Edited by A. Vögelin, M.A. xiv.+141 pp. (Macmillan.) 2*s.* 6*d.*—Probably the delightful works of Isolde Kurz are known to few in England, and Mr. Siepmann is to be congratulated on being able to include this capital short story from her "Florentiner Novellen" in his series. It takes us back to the Florence of the Renaissance, telling how a young Swabian, who had accompanied Graf Eberhard, of Würtemberg, wins the daughter of a famous Humanist, who has consented to the betrothal on condition that *Veit* will find for him a unique Ciceronian codex traced to Swabia. The style is good; the text is well printed; and the notes supplied by the editor are thoroughly satisfactory. The "fourth appendix" contains a good account of the suffixes used to form abstract nouns.

Joh. Walther, Allgemeine Meereskunde. Abridged and edited by S. A. Sterling. viii.+180 pp. (Isbister.) 2*s.* 6*d.*—To the large number of science students who recognise the importance of a knowledge of scientific German, this book may be confidently recommended. It is printed in English type, so that they will not be troubled by the German characters, which are rarely used in scientific works. The notes are short, and there is a small vocabulary of technical terms. Some twenty good woodcuts enhance the value of this book.

Th. Ebner, Herr Walther von der Vogelweide. Adapted and edited by E. G. North. xx.+115 pp. (Macmillan.) 2*s.*—We doubt the wisdom of including this volume in a series of "Elementary Texts." The language of the speakers is so archaic, and the life and ways described are so different from those of the present day, that it would seem to make a reading book for rather advanced students only. The brief introduction provides a sketch of Walther's times, and emphasises his importance as a writer of patriotic verse. A few specimens, with a rendering in simple English, might have been added with advantage. The account of his life is accurate on the whole; but it is a mistake to say that "his subsequent poems are known as the *Kreuzlieder*," as though this term applied to religious poems indiscriminately. The notes are brief and sufficient. The vocabulary appears to be trustworthy. There are appendices with words, phrases, and passages for re-translation.

Lehrbuch der deutschen Sprache. By A. Werner-Spanhoofd. xi.+301 pp. (Isbister.) 2*s.* 6*d.*—Another attempt to give a fresh lease of life to the "grammatical and translating" method by a judicious infusion of "reform method." The remarks about pronunciation are in part inaccurate. The development lessons are really meant for the teacher, and should not appear in the children's book. In the early part the sentences for translation from and into English are not connected. Teachers will certainly glance through the book with interest and profit, but it cannot be unreservedly recommended for class use.

How to Learn a Foreign Language. A review of the best methods including the latest up-to-date. 66 pp. (Geo. Philip.) 6*d.* net. A curious *résumé* of some methods which have been before the public for a long time, culminating in a glorification of the Gouin method. There is a certain amount of common sense in the early part of the pamphlet. We recommeud the author to read earnestly the book to which he refers on p. 57, viz., the "Practical Study of Languages," by Dr. Sweet. (He will then probably come to regret his offensive remark about that eminent scholar.) Perhaps Mr. Pulman would also do well to pay some attention to the work done by Vietor, Walter, Passy, and a host of other teachers, of whom he is in ignorance. Or does Mr. Pulman regard their efforts as beneath his criticism?

Classics.

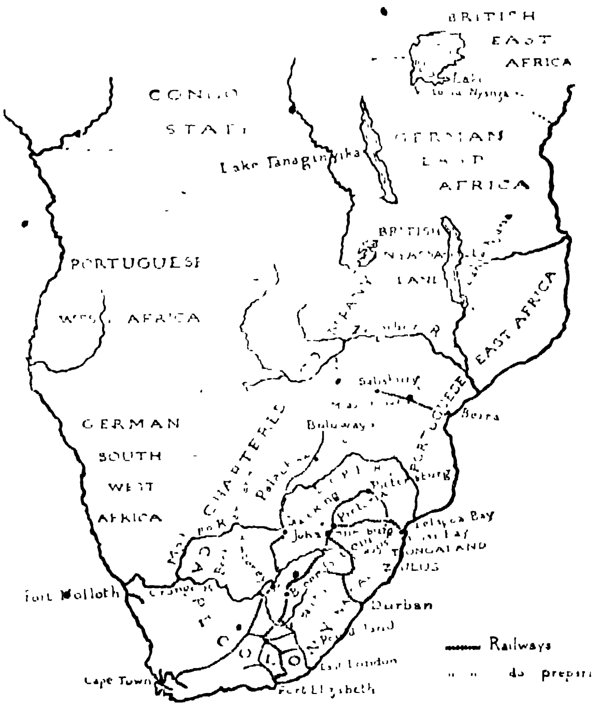
A second instalment of four volumes of the *Scriptorum Classicorum Bibliotheca Oxoniensis* has now been published by the Oxford Press. They are the following:—*Aeschyli Tragoediae cum fragmentis.* By A. Sidgwick, M.A. 3*s.* *Apollonii Rhodii Argonautica.* By R. C. Seaton, M.A. 2*s.* 6*d.* *Aristophanis Comoediae. Tom. I.* By F. W. Hall, M.A., and W. M. Geldart, M.A. 3*s.* *Xenophontis Opera. Tom. I.* By E. C. Marchant, M.A. 2*s.* 6*d.*—The prices here given are those for the books in paper covers; in limp cloth they are 6*d.* more, and the Aeschylus and Aristophanes are also issued on India paper at 4*s.* 6*d.* The series is marked by excellence of type and neatness of appearance, and in the text by scholarly acumen and careful criticism. We venture to think that the present texts, the production of which has been entrusted to experts, not all of whom, by the way, are Oxford men, will long remain as the best available from the known codices and the almost certain restorations of well known scholars. In the volume of Aeschylus we find, in addition to the extant dramas, 494 fragments, some being connected passages, others single lines, and again others single words. The plays of Aristophanes in this first volume are *Acharnenses*, *Equites*, *Nubes*, *Vespae*, *Pax*, *Aves*, and the rest with the fragments are to form a second volume. The first volume of Xenophon, which is to be followed by four others, contains *Historia Graeca*. The production of this series of critical texts, beautifully got up, and withal cheap at their price, is a credit to the University, which for so long was represented by the frightfully uncritical and inaccurate texts of the "Oxford Pocket Classics."

A Commentary on the Hellenica of Xenophon. By G. E. Underhill, M.A. xcvi. + 378 pp. (Oxford Press.) 7s. 6d. This work of Mr. Underhill's comes opportunely with the text by Mr. Marchant in the series just noticed. The editor himself, who has published an edition of the first two books, discovered one first-rate MS. and two inferior ones in the Vatican Library, and, with a generosity duly acknowledged in the preface to Mr. Marchant's text, gave that editor his collation of them. The present commentary, accordingly, is based on that text, a short appendix sufficing to note variations preferred to the readings therein contained. In the introduction we find a systematic treatment of Xenophon's method of composition, with an examination of various theories to account for his large omissions, and the curious inequalities of his historical style. Xenophon, we imagine, was led to write history by strong personal interest, and was constitutionally unable to view events with the detachment of the philosopher, and, as the editor says, "he is an oligarch, a friend of Sparta, a hater of Thebes. Naturally, therefore, all the corresponding feelings tend to find a place in his narrative; they influence consciously or unconsciously his selection of subjects, his omissions and commissions. Above all, however, he is an honest man, fond of truth and justice for their own sake, a pious worshipper of the gods. This higher side of his character appears in constant conflict with the lower . . . . Xenophon seems always to fall between two stools." A good deal of space is devoted to the consideration of the chronology, and in one particular—the return of Alcibiades—cause is found to reject an opinion formerly maintained. The notes deal in a luminous manner with text and grammar, but are specially valuable in their historical aspect, other authorities being freely quoted and compared. In the appendix are found longer dissertations on various points of historical interest, in which are collected and discussed theory and evidence on various problems of Athenian, Spartan and Theban constitution and history. This book is undoubtedly destined to hold the field for many years as the best edition, English or foreign.

In the series of "Bell's Illustrated Classics" we have received *Cæsar, Book I.* By A. C. Liddell, M.A. xxxvi. + 144 pp. *Vergil. Æneid, Book I.* By E. H. S. Escott, M.A. xliii. + 88 pp. *Book III.* By L. D. Wainwright, M.A. xlviii. + 144 pp. *Selections from Ovid's Metamorphoses.* By J. W. E. Pearce, M.A. xxxiv. + 87 pp. (1s. 6d., or without notes 1s.) This series maintains its useful features for young students of the classics. We note that many of the illustrations have appeared before, but in these volumes there are some very good new ones, notably the reproductions from photographs used as frontispieces to Cæsar I. and Vergil I. The notes and other matter are full, and contain all that is necessary for the beginner.

Geography.

A History of South Africa. By W. Basil Worsfold, M.A. (The Temple Cyclopædic Primers.) (Dent.) 1s.—The average schoolboy thinks he has patronised patriotism sufficiently when he has put on a khaki necktie, inserted a button-portrait or two in his coat and clamoured for a half-holiday on propitious occasions. For the rest he knows next to nothing of our interests in South Africa. He is not altogether to blame in this respect; very rarely does the time-table admit of that elasticity of interpretation which enables the teacher to leave the beaten track now and again and diverge into a path that is not crossed by the thorny fence of examination. Yet we doubt whether the various examining bodies could confer a greater benefit on the nation at large than by adopting as a specified text-book some such book as the one now before us. Mr. Worsfold's peculiar qualifications for the task he has set himself in this small volume are too well known to need any explanation on our part. What we here insist on is the suitability of the book for use in the higher forms of our secondary schools. The style is clear, concise, and forcible, and the matter is judiciously arranged and impartially handled. The characteristic difficulties of South African administration are first clearly set out, and it is shown how these have, from time to time, increased. The very agencies which many people nowadays would consider beneficent and liberal in their influences have frequently led to trouble in South Africa, *e.g.*, the missionary societies, the Slavery Abolition Act, &c. But the Imperial Government has throughout the history of the Colony displayed a pitiful vacillation in its administrative policy, and has shown a disposition to yield to the well-meant but fatuous clamourings of the philanthropist at home rather than to the reiterated warnings of the "men on the spot." Mr. Worsfold is very emphatic in his charge against the Government that censured Sir Bartle Frere: "The Government strove to appease alike their opponents and their supporters by first censuring and then partially superseding the man whose only fault lay in the fact that the duties which had been laid upon



SOUTH AFRICA IN 1899
(Showing Railways)

him were at once too skilfully and too faithfully executed." And, later on, he speaks of "fifty years of official ineptitude, fifty years of national neglect." The history of South Africa is very complicated, but the course of events since 1652 is admirably shown in this little book, which, we repeat, ought to be widely used in schools. Several maps (one of which is here reproduced) and illustrations add to the value of a volume that would be cheap at twice the price.

Grammar and Composition.

A First-Form Grammar. By M. Morgan Brown. 80 pp. (Longmans.) 1s. 6d.—The author tells us his aim has been "to make the Grammar, as far as I could, introductory to Kennedy's Latin Primer, which I believe is the Latin Grammar most children pass on to . . . I am not trying to teach children English Grammar, but I am trying to give them a good working explanation of the elementary rules which underlie the three languages they have to deal with—that is, English, Latin and French." The book, then, may be called a Primary Latin Primer; it is doubtful, we think, whether room will be found in our already over crowded time-tables for the use of such a work.

Science and Technology.

Elementary Inorganic Chemistry—Metals. By S. R. Trotman, M.A. ii. + 182 pp. (Rivingtons.) 2s.—Mr. Trotman here continues the work commenced in his previous volume on the non-metallic elements. The book presents few, if any, characteristics to distinguish it from many of its predecessors. The parts of the subject usually introduced into a school book on the chemistry of the metals are here dealt with in much the usual order. The title of chapter iii., p. 14, "Nomenclature and Crystals," strikes us as a little strange. At the same time we are glad to be able to call attention to Mr. Trotman's clearness of expression, and the satisfactory way in which the book is printed.

The First Elements of Science Arranged as Observation Lessons and Correlated with Drawing. Written by George Ricks, B.Sc. Illustrated by Alfred Wilkinson. Parts I., II., III., 31 + 12 pp. plates each. (Macmillan.) 1s. 6d. each part. Originality is always a commendable characteristic, and when it finds expression in a book intended for use by teachers, it particularly merits attention. The novelty in the books under notice consists in the demonstration afforded by the notes and plates that science and art may be successfully combined in object-lessons. To teach a child to observe, compare, and contrast, is one of the chief aims of lessons on familiar objects, whether the things examined belong to the animal, plant, or inorganic kingdoms. Sketches of the things observed provide excellent tests of the amount of information obtained, and serve also to fix the pupil's ideas. The present books are based upon this principle. Each contains concise notes on from thirty to thirty-five lessons upon a variety of common substances and living things, and with each lesson are given sketches, white on black, suitable for drawing upon the blackboard by the teacher. After copying the teacher's drawings, and so obtaining a general idea of the forms represented, the pupils are expected to sketch the objects themselves from direct observation, and then from memory. Provided that time can be found for all these operations, the pupils who receive instruction upon the lines here laid down will learn much about many things around them.

The Physical Basis of Memory. By William Elder, M.D. 24 pp. (Oliver and Boyd.) 6d.—Dr. Elder has had the lecture he delivered at a meeting of the Edinburgh branch of the British Child-Study Association reprinted; many people will be glad to read an expert's opinion on an important subject.

Miscellaneous.

The Making of Character. By John MacCunn, M.A., LL.D. vii. + 226 pp. (Cambridge University Press.) 2s. 6d.—The title of this book will ensure its examination by many earnest teachers. But we are afraid that a more intimate acquaintance with its contents will lead to considerable disappointment. Its scope is more accurately described by its sub-title—"Some Educational Aspects of Ethics." The teacher, in common with other thoughtful persons, would, no doubt, be benefited by a careful study of its contents; but his method of treatment is too general, and Prof. MacCunn is, we think, a little too discursive to make him of real service to the student of pedagogics. The volume belongs to a series intended for schools and training colleges, but the exigencies of a crowded school curriculum and the already too numerous demands upon the time and energy of students in training colleges will, we predict, go far to make its extensive adoption in either class of institution impossible. At the same time we cordially recommend acting schoolmasters and schoolmistresses, with leisure and a philosophical turn of mind, to obtain and study the book. The subject is dealt with under four main divisions (1) Congenital Endowment, its nature and treatment; (2) Educative Influence; (3) Sound Judgment; (4) Self-Development and Self-Control. Of these the second will, perhaps, appeal more directly to teachers, though here, as in other cases, Prof. MacCunn takes the reader so far and presents so many subjects for consideration that the class-room and the children gathered there are lost to sight. It is in the making of the characters of his own few pupils the teacher finds his chief concern, and, if we know him aright, he is apt to be impatient of generalisations which, with their wide application, seem entirely to miss the particular cases with which he has to grapple. For the undergraduate studying mental and moral science the book will, however, form an excellent piece of reading.

A Course of Harmony. By Sir J. F. Bridge and F. J. Sawyer. 200 pp. (Novello & Co.) 3s. 6d.—It is not long since Sir John Stainer and Sir A. C. Mackenzie were both lamenting publicly the disproportionate amount of attention bestowed on the technical side of instrumental performance in the study of music as it is at present pursued in schools; but the number of treatises on harmony which have been published of late years certainly testify to a larger appreciation of the scientific side of the art than was formerly customary. Since the publication of Dr. Stainer's well-known seven-and-sixpenny work—it is getting time that a cheaper edition was issued—countless references have been made to it as "a brilliant book." Doubtless the description is true in spite of many theoretical shortcomings, but no longer is that work without a rival. The volume under review is the able and striking result of the collaboration of the Gresham Professor of Music and his former pupil, Dr. Sawyer, of Brighton, and it is not too much to predict that for practical teaching purposes this will soon almost clear the field. The clear, clean style of printing and the neat arrangement of subject matter strike one immediately upon opening the volume; and these mechanical perfections are only part and parcel of a most orderly and lucid development of the subject matter. Theorists will be amply satisfied with the treatment of suspensions, derivatives from the dominant, and the so-called secondary sevenths; and those who use the treatise are likely to promote a pupil's progress very materially because the authors lay great stress upon orderly progressions in the bass. To write a good bass is to get a solid foundation in more senses than one, and no volume that we know is better adapted to teach this difficult art than the present. The references to Goss and Macfarren prove that the authors favour no empirical methods, and a thorough study of this little book will go far to make a very reasonably sound musician.

Early Childhood. By Margaret McMillan. xii. + 211 pp. (Swan Sonnenschein.) 3s. 6*d.*—The authoress is concerned only with children up to the age of twelve, and her book will appeal more directly, we think, to parents and teachers in infant schools and kindergarten. The subject of education is regarded from a physiological point of view, and the urgent necessity for exercising a due supervision over the impressions received by an infant, his movements, the training of his arms and hands, his voice and his breathing habits, are insisted upon in an intelligent and convincing manner. The ideas put forward on the subject of moral training are broad, and free from any narrow dogmatism. Though the book is, on the whole, likely to be helpful and stimulating to those in charge of the education of very young people, it suffers in places from a want of power of "hitting the mark," a tendency to rather talk round a question than to dispose of it in a few concentrated sentences. The writer's knowledge of public elementary education enables her to write with considerable authority on many of the subjects she introduces.

Eight Aysgarth School Sermons. By C. H. Boutflower. xii. + 110 pp. (Macmillan.) 2s. 6*d.* These are some of the best sermons for young boys we know. They were preached in the chapel of Aysgarth School, Newton-le-Willows, Yorkshire, by the chaplain to the Bishop of Durham, at the invitation of the late headmaster, the Rev. C. T. Hales. Mr. Boutflower has a simple, earnest, convincing manner which, we feel certain, immediately secures the sympathetic attention of his hearers. We have read the little book from beginning to end with the keenest pleasure. We hope it may be our good fortune to some day hear Mr. Boutflower talking to boys. By permission of the publishers, a selection from one of the sermons is given in our "School Pulpit" columns.

Passages for Dictation. 96 pp. (Edward Arnold.) 10*d.* Is a convenient collection of extracts from prose writers, suitable as exercises in dictation for higher forms. We think the names of the authors might have been given, but even in its present form the book will be very useful to form-masters and form-mistresses.

SENIOR OXFORD LOCAL EXAMINATION, JULY, 1900.

Revision Papers.

THE following revision papers in the most popular of the subjects for the Senior Oxford Local Examination have been specially prepared for us by experienced teachers. They are designed to provide form masters and mistresses with a means of subjecting their candidates for the examination in July next to a preliminary test by an external examiner, and in this way to enable teachers to discover weak points needing revision. Copies of the papers in any of the subjects can be obtained in a form suitable for distribution in class. The reprinted papers are sold in packets of twenty-five at a cost of 6d. net. for each subject. The papers may be ordered through a bookseller, or they may be obtained (post free) from the editors of THE SCHOOL WORLD, but in the latter case all orders must be *prepaid.*

Arithmetic.

(1) Find the Greatest Common Factor of 501966 and 555291.

(2) Simplify $(3\frac{3}{8}-1\frac{3}{4})$ of $(6\frac{3}{8}+3\frac{4}{5})\div(7\frac{1}{8}-3\frac{7}{60})$.

(3) Express $(1\cdot\dot{6}2\dot{1}+3\cdot\dot{1})\div(6\cdot7\dot{0}\dot{1}-\cdot1\dot{3}\dot{4})\times4\cdot\dot{1}$ as a circulating decimal.

(4) A metre is equal to 39·37 inches; how many metres are there in 6¼ miles?

(5) Find the value of ·1375 of £4 11s. 8d.

(6) What will be the cost of a bar of silver weighing 1lb. 9 oz. 16 dwt. 6 gr. at £1 7s. 3d. per lb.?

(7) Extract the square root of 20449·858009.

(8) At what rate per cent. per annum, Simple Interest, will £415 12s. 6d. amount to £665 in 7½ years?

(9) A copper plate one inch thick, 4 ft. wide and 10 ft. 6 in. long weighs 1,925 lbs. Find the weight of an iron beam 9 in. wide, 1½ in. thick and 6 ft. long, if 9 cubic inches of copper weigh as much as 11 cubic inches of iron.

(10) A man invests a certain sum of money in 9 per cent. railway stock at 175; of the income derived from this investment he spends £400 a year, the interest over this amount being re-invested in the same stock for two years in succession when the prices of the stock are 180 and 200 respectively; by this means he increases his income for the third year to £454 17s. 3d.; how much money did he originally invest?

Or What is the price of 3¼ per cent. stock when a sum of £1,419 invested will produce an income of £47 13s. 4d.?

(11) A, B and C undertake to do a piece of work in 32 days for £19 2s. 6d.; A works for the first 15 days, B for the first 24 days and C for the first 28 days, at the end of which time they find there is still ⅛th of the work to be done; by all working together they can just finish the work in the allotted time. If A works twice as fast as B and B does as much work in 3 days as C does in 4, how must the money be fairly divided between them?

Or Oranges are sold at the rate of 25 a shilling at a gain of 20 per cent. What is the gain or loss per cent. when they are sold at the rate of four for three halfpence?

Answers.

(1) 711. (2) $4\frac{1}{2}$. (3) $2\cdot\dot{0}5\dot{2}$. (4) 10058·42. (5) 12s. 7¼d.
(6) £2 9s. 6·39d. (7) 143·003. (8) 8%.
(9) 253 lbs. 2 oz. (10) £8,750; or, 96¾.
(11) A, £8 1s. 6d; B, £5 19s.; C, £5 2s. *Or*, loss 6¼%.

Old Testament—Genesis.

(1) "Abraham and Joseph were capable administrators: Jacob was a born adventurer, and Isaac, politically and socially, almost a nonentity." Can you justify this statement by a comparison of the political proceedings of all four men?

(2) Draw a map to include the following places, and say in what connection they are mentioned in this book:—Ur of the Chaldees, Shechem, Zoar, Mount Seir, Beersheba, Mount Gilead, Hebron.

(3) State all the circumstances in which God made and renewed his covenant with Abraham.

(4) Discuss the characters of Reuben and Esau as they are unfolded in this book.

(5) State what you know of Egyptian affairs during the period treated of in the Book of Genesis. What indications do we get of Egyptian religion and social life?

(6) Give an account of the family of Jacob. State as far as you can their ultimate tribal fortunes. What was the significance of the phrase, "From Dan unto Beersheba?" How also does "the river, the great river Euphrates" come into the narrative?

(7) Who were the wives of Joseph, Isaac, Esau, Bethuel? Say what you know of them; and in detail discuss the character of Rebekah and Sarah.

(8) Explain with reference to the context:—

(*a*) "And Isaac dwelt in Gerar."

(*b*) "And yet indeed she is my sister."

(*c*) "We shall see what will become of his dreams."

(*d*) "The Lord showed him mercy and gave him favour in the sight of the keeper of the prison."

(*e*) "Until Shiloh come, and unto him shall the gathering of the people be."

(9) What part is played by dreams and visions in the circumstances of which this Book of Genesis treats? State what you consider to be the indications of character to which such things point.

New Testament—St. Luke.

A.

(1) Sketch the career of John the Baptist; give an account of his teaching; and show how it was designed practically to affect the classes of people who came to hear him.

(2) What are the points of difference between the genealogy of Jesus as given by St. Luke and by St. Matthew?

(3) "He charged him to tell no man." Relate the case which forms the context to these words; mention other instances in which Jesus imposed a like injunction; and give fully the apparent reasons for this silence.

(4) "They seek a sign." Give the context of this passage; give parallel instances from the Old Testament, and explain the significance of "Jonas," "queen of the south," and "Nineve."

(5) Explain (*a*) the parable of the Barren Fig Tree; (*b*) the parable of the Prodigal Son.

(6) Who were (and in what connection are they mentioned) – Abia, Barabbas, Eliseus, Jairus, "Judas not Iscariot," Joanna, and Susanna.

(7) Three classes of "disciples" are mentioned in this Gospel. Specify them, and say what their practices were, and how they were connected or how they differed each from the others.

(8) Explain and give the context

- (1) "Nothing is secret."
- (2) "Elias had appeared."
- (3) "Let the dead bury their dead."
- (4) "Adorned with goodly stones."

(9) Point out and explain briefly any differences from the Revised Version in the following: –

- (*a*) "Her neighbours and her cousins heard how the Lord had showed great mercy upon her."
- (*b*) "A light to lighten the Gentiles."
- (*c*) "No man putteth a piece of a new garment upon an old."
- (*d*) "And the whole multitude of them arose and led him unto Pilate."
- (*e*) "Let the dead bury their dead, but go thou and preach the Kingdom of God."

(10) Translate and explain (stating the connection) the following phrases.—

Συνοχὴ ἐθνῶν ἐκ ἀπορίᾳ,
καὶ τὰ βρέφη,
καὶ ἐξεμυκτήριζον αὐτόν,
ἐν μνήματι λαξευτῷ

(11) Translate and explain, with short notes-

(*a*) *ποιήσατε οὖν καρποὺς ἀξίους τῆς μετανοίας καὶ μὴ ἄρξησθε λέγειν ἐν ἑαυτοῖς, Πατέρα ἔχομεν τὸν Ἀβραάμ· λέγω γὰρ ὑμῖν ὅτι δύναται ὁ θεὸς ἐκ τῶν λίθων τούτων ἐγεῖραι τέκνα τῷ Ἀβραάμ. ἤδη δὲ καὶ ἡ ἀξίνη πρὸς τὴν ῥίζαν τῶν δένδρων κεῖται.*

(*b*) *καὶ διατὶ οὐκ ἔδωκάς μου τὸ ἀργύριον ἐπὶ τράπεζαν; κἀγὼ ἐλθὼν σὺν τόκῳ ἂν αὐτὸ ἔπραξα.*

(*c*) *οἱ δε γεωργοὶ ἐξαπέστειλαν αὐτον δείραντες κενόν. καὶ προσέθετο ἕτερον πέμψαι δοῦλον· οἱ δὲ κἀκεῖνον δείραντες καὶ ἀτιμάσαντες ἐξαπέστειλαν κενόν.*

English Grammar.

(1) Analyse the following passage:—

The aged man that coffers up his gold
Is plagued with cramps and gouts and painful fits,
And scarce hath eyes his treasures to behold;
But still like pining Tantalus he sits
And useless bans the harvest of his wits,
Having no other pleasure of his gain
But torment, that it cannot cure his pain.

(2) Parse fully the words in italics below: –

- (*a*) Wisest Fate says *No*
- (*b*) Old Time is still *a-flying*.
- (*c*) *Prythee*, why so pale?
- (*d*) Shall I call thee *bird*,
  Or *but* a wandering Voice?

(3) Discuss the syntax of these sentences:

- (*a*) They are very satisfied at the verdict.
- (*b*) I met him a week since.
- (*c*) John was a near relation of Henry's.
- (*d*) All verbs are not Transitive.

(4) What are the uses of the Infinitive mood? Give instances.

(5) Explain the origin of the following forms:—Piecemeal, widower, children, could, notwithstanding, one.

(6) The grammatical structure of English is pure Teutonic. Illustrate this statement as fully as you can.

(7) Classify Prepositions according to (*a*) their use, (*b*) their origin.

(8) Distinguish between the meanings of *stress* and *emphasis*; *cognate* and *derived*; *stem* and *root*; *hybrid* and *doublet*.

Discuss the spelling—*analyze*.

English History.

1066–1399.

[*The questions marked * are alternative to the questions bearing the same number; candidates for distinction must select the unasterisked questions; and no candidate is allowed to do both.*]

A.

(1) Write a short account of the struggle for supremacy between the great nobles and the Crown from 1074 to 1174.

(2) Enumerate Henry II.'s continental possessions, and trace the steps by which they were lost to England.

(3) Examine the influence of questions of Church and State upon English history during the Norman period.

Or (3*) Write a life of **either** Anselm **or** Lanfranc **or** Ranulf Flambard.

(4) Tell the story of the events leading up to King John's grant of *Magna Carta*, introducing comments on the following statements:

- (*a*) "The Great Charter had first an obscure birth by usurpation, and was secondly fostered and shown to the world by rebellion" (Sir Walter Ralegh).
- (*b*) "The Great Charter is the act of the united nation, the church, the barons, and the commons, for the first time thoroughly at one" (Bishop Stubbs).

Or (4*) Explain clearly the terms, *Estates of the Realm*, *Investiture*, *Jury*, *Scutage*, *Villein*.

B.

(5) Write a life of **any one** of the following persons:—(*a*) The Black Prince, (*b*) Piers Gaveston, (*c*) John Wyclif.

(6) Describe the foreign wars of Edward III. What was their effect on the internal condition of England?

(7) Compare the character and objects of the opposition to Henry III., Edward II. and Richard II.

Or (7*) Give an account of the Lords Ordainers and of the Lords Appellants.

(8) Trace throughout your period the relations existing between England and **either** (i.) Wales, **or** (ii.) Scotland, **or** (iii.) Ireland.

Or (8*) Write an account of **any one** of the following episodes:

- (i.) Henry II.'s Conquest of Ireland.
- (ii.) Edward I.'s Conquest of Wales.
- (iii.) The struggle of Robert the Bruce for Scottish independence.

(NOTE. *This paper does not contain any questions set in the last Oxford Local Senior paper* (1898) *dealing with this period.*)

As You Like It.

(1) Comment on these passages in reference to their context:—

What woman in the city do I name,
When that I say the city-woman bears
The cost of princes on unworthy shoulders?

One inch of delay more is a South-sea of discovery; I prithee, tell me who is it quickly, and speak apace.

'Tis not her glass but you, that flatters her,
And out of you she sees herself more proper
Than any of her lineaments can show her.

The heathen philosopher, when he had a desire to eat a grape, would open his lips when he put it into his mouth, meaning thereby that grapes were made to eat and lips to open.

(2) What different kinds of love are treated in this play? Illustrate as fully as you can.

(3) Distinguish between the cynicism of Jaques and of Touchstone.

(4) What are the qualities which make Rosalind the heroine, rather than Celia? Support your statements by quotations from the play.

(5) From what source, or sources, did Shakespeare draw his plot? Explain the objects which he had in view in his divergences from his original.

(6) Explain and give the derivations of—

Atomy, graff, quotidian, point-devise, lief, curtle-axe, eke, bob, carlot, motley, purlieu, swashing, reek, unexpressive, tax quip.

(7) Explain the allusions in—

Clubs cannot part them.
Troilus had his brains dashed out with a Grecian club.
Cæsar's thrasonical brag.
With eyes severe and beard of formal cut.
As the Destinies decree.
I will scarce think that you have swum in a gondola.
As the most capricious poet, honest Ovid, was among the Goths.
Worse than Jove in a thatched house.
We shall have shortly discord in the spheres.

Geography.

(1) On the map of Canada insert:—The Laurentian Lakes, Quebec, Montreal, Calgary, Regina, Port Arthur, Saskatchewan River and the Rocky Mountains. Mark the southern frontier, and number the meridians of longitude and the parallels of latitude.

(2) On the map of South Africa mark the boundaries of Cape Colony, Orange Free State, Transvaal, Natal; indicate the extent of mountainous country, and put the following names in their right places:—Colesberg, Kimberley, Harrismith, Bethulie.

(3) Discuss the river and canal systems of Russia.

(4) Which are the most densely populated parts of Italy? Give reasons. Account for the generally good state of preservation of Italian ruins.

(5) Give reasons for the following:—

(*a*) The height of the tidal wave at Cuxhaven.
(*b*) The industrial importance of Switzerland.
(*c*) The alternations of the monsoons.
(*d*) The Australian drought.

(6) Give some account of the chief ocean currents.

(7) Describe as accurately as possible the position of the following:—Cuyaba, Batum, Mendoza, Callao, Mont d'Or, Mauna Loa, Brindisi, Kicking Horse Pass.

(8) From what places do we get our chief supplies of palm oil, cork, india rubber, mercury, hemp, tobacco? For what various reasons are our imports necessary?

(9) Describe a journey by the Midland Railway from London to Carlisle, noting the watersheds traversed, the valleys utilised, the points reached by canals. Account for the comparatively large number of inclines on this line.

French.

I. Translate into English:—

L'aimable Toscan avait dit cet amiable proverbe en caressant du fouet la pauvre rosse blanche attelée à sa voiture, une de ces carrioles à deux roues que les gens du pays dénomment des *barrocini*. Les brancards attachés très haut pointent à la hauteur des oreilles de la bête. Les deux personnes que peut tenir l'unique banquette sont rejetées en arrière à chaque coup de collier. Elles doivent, pour maintenir leur équilibre, assurer leurs pieds sur le treillis en grosse corde qui sert de fond à la voiture et de filet pour les paquets. Mais c'est tout de même un admirable outil à rouler vite que cette dure charrette, si légère, si *gaie*, et elle brave fondrière et cailloutis, montées et pentes. Et puis, lorsqu'un cocher est plaisant comme semblait celui-ci et qu'il parle le joli Italien si male et si musical de cette province, quelle fete d'aller ainsi, parmi les oliviers, les mûriers, les vignes et les chénes verts.

II. Turn into French:—

Had the entire direction of the war been entrusted to Clive, it would probably have been brought to a speedy close. But the timidity and incapacity which appeared in all the movements of the English, except where he was personally present, protracted the struggle. The Mahrattas muttered that his soldiers were of a different race from the British whom they found elsewhere. The effect of this langour was that, in no long time, Rajah Sahib, at the head of a considerable army, in which were four hundred French troops, appeared almost under the guns of Fort George and laid waste the villas and gardens of the gentlemen of the English settlement.

III.

(1) Give the first person singular of the future of—*venir* and *voir*; the second person plural of the preterite of—*conquérir* and *prendre*; and the second person singular of the imperative of—*s'en aller* and *s'asseoir*.

(2) Write complete sentences beginning with—*Il faut que . . . , il me semble que . . . , voilà le meilleur cheval que . . .*

Give the French for—audience, barracks, charge, confectioner, merchant and physician; and the English for—*audience, baraque, charge, confectionneur, marchand* and *physicien*.

(3) Give the general rules for the agreement of the past participle in French and illustrate by means of examples. Put into French:—You have read more books than I have. I thought her beautiful, but she was not.

(4) How can a French affirmative sentence be made interrogative (*a*) when the subject of the verb is a noun, (*b*) when the subject of the verb is a pronoun? Give two examples of each method.

(5) When is the article, *le, la*, used before a noun instead of the possessive *mon, ma, ton*, &c.? Give examples.

When should "what" be rendered by (*a*) *quel*, (*b*) *ce que*, and (*c*) *qu'est ce qui*?

(6) Distinguish between—*prés, près, prêt* (adj.) and *prêt* (noun): *cote* and *côté*; *à peine* and *avec peine*. Give the French for—(*a*) One dozen and a half; (*b*) half a dozen.

Euclid.

(1) If two triangles have two sides of the one equal to two sides of the other, each to each, but the angle contained by the two sides of one greater than the angle contained by the corresponding sides of the other; then the base of that which has the greater angle is greater than the base of the other.

ABC is an isosceles triangle and O is any point within the triangle, and D is the middle point of the base BC; show that the angle ODC is obtuse, right-angled or acute according as the angle OAC is greater than, equal to or less than the angle OAB.

(2) If a parallelogram and a triangle be on the same base and between the same parallels, the area of the parallelogram is double that of the triangle.

ABC is any triangle and D is any point in AC. If E,F,G,H, the middle points of AB, BC, CD, DA be joined in order, the parallelogram EFGH so formed is half the area of the triangle ABC.

(3) If a straight line be divided into any two parts, the square on the whole line is equal to the sum of the squares on the two parts together with twice the rectangle contained by the two parts.

In a right-angled triangle five times the square on the median bisecting the hypotenuse is equal to the sum of the squares on the other two medians.

(4) In equal circles the arcs which subtend equal angles, whether at the centres or at the circumferences, are equal.

PQ is a fixed chord in a circle and PAQ, PBQ the two segments into which the circle is divided. The angle PAQ is bisected by AC meeting the circumference in C and D is the other extremity of the diameter CD; show that DB bisects the angle PBQ.

(5) Describe an isosceles triangle having each of the angles at the base double of the third angle.

(6) (i.) What is meant by "continued proportion"?

(ii.) Enunciate the proposition which is expressed algebraically by the statement $ad=bc$.

(7) Similar triangles are to one another in the duplicate ratio of their homologous sides.

Or If the bisectors of three angles of a quadrilateral meet in a point the bisector of the remaining angle also passes through that point.

(8) ABC is a triangle and D,E,F are the feet of the perpendiculars drawn from A,B,C to the opposite sides; then

$$FD : DC = BD : DE.$$

Or Describe a circle to touch a given circle and a tangent to the given circle at a given point.

(9) If a straight line is perpendicular to each of two straight lines at their point of intersection, it shall also be perpendicular to the plane in which they lie.

Or Circumscribe a circle about a given triangle.

Algebra.

(1) Find the L.C.M. of

$$a^3-2a^2b+b^3,\ a^3-2ab^2-b^3,\ a^3+a^2b-ab^2-b^3.$$

(2) Multiply $x^2-(p+q)x+2q(p-q)$ by $x+p+q$.

Resolve into factors $4x^4-65x^2y^2+16y^4$.

(3) Simplify:—

(i.) $\dfrac{14}{2x^2+5x-3}+\dfrac{x}{x^2+5x+6}-\dfrac{10}{2x^2+3x-2}$;

(ii.) $\dfrac{1}{a-\dfrac{1}{a^2-\dfrac{1}{a}}}-\dfrac{1}{a^3-\dfrac{1}{a^2-1}}$.

(4) Solve the equations:—

(i.) $\dfrac{x-1}{x-2}+\dfrac{x-2}{x-3}$

(ii.) $\dfrac{3x}{3x+1}+\dfrac{y}{\ }=-2=3x+1+2(2-y)$.

(5) Simply:—

(i.) $\dfrac{\sqrt{2}+1}{(\sqrt{2}-1)}\ \dfrac{\sqrt{3}}{(\sqrt{3}-\sqrt{2})}$

(ii.) $\left(\dfrac{a^2b}{c^3}\right)^{\frac14}\times\left(\dfrac{a^{-2}b^{-1}}{c}\right)^{-1}\div\sqrt[3]{\left(ab^{\frac32}c^{-3}\right)}$.

(6) Solve the equation $qx^2-(pq-q+1)x+p-1=0$; and write down the quadratic equation whose roots are $4a$ and $-5b$.

(7) If $a:b::b:c$ prove that

(i.) $a+2b+c:a-c::a-c:a-2b+c$;

(ii.) $a^2+2b^2+c^2:(a+b)^2+(b+c)^2::(a+b)^2+(b+c)^2:(a+2b+c)^2$.

(8) A colliery owner A sells coal at a price which is 20 per cent. more than that of a second colliery owner B, but the cost of carriage from A's colliery is 25 per cent less than from B's. If I buy coal from A and sell it at 18s. per ton, I gain 20 per cent.; but if I buy from B and sell it at 17s. 6d. per ton I gain 25 per cent. At what price did each owner sell his coal and what was the cost of carriage in each case?

(9) In how many ways can two boys divide between them 8 apples, 4 pears and 7 oranges?

(10) Find the coefficient of x^n in the expansion of

$$(1-x)^4(1+x)^{-2}.$$

The sum of the squares of the coefficients in the expansion of $(1-x)^n$ is $\dfrac{|\underline{2n}}{|\underline{n}\ |\underline{n}}$.

(11) Sum the series:—

(i.) $\dfrac{1}{2.6}+\dfrac{1}{6.10}+\dfrac{1}{10.14}+$ to n terms;

(ii.) $\dfrac{1}{|\underline{3}}+\dfrac{2}{|\underline{5}}+\dfrac{3}{|\underline{7}}$ to infinity.

(12) If $\dfrac{p_n}{q_n}$ be the nth convergent to the continued fraction $+\dfrac{1}{a_2+}\,\dfrac{1}{a_3+}\,\dfrac{1}{a_4+}$ show that $p_n=a_np_{n-1}+p_{n-2}$, and that $q_n=a_nq_{n-1}+q_{n-2}$.

In the continued fraction $\dfrac{1}{a+}\,\dfrac{1}{a+}\,\dfrac{1}{a+}\,\dfrac{1}{a+}\cdots$ show that $p_n^2+p_{n+1}^2=p_{n-1}p_{n+1}+p_np_{n+2}$.

Answers.

(1) $(a-b)(a+b)^2(a^2-ab-b^2)$. (2) $x^3-(p^2+3q^2)x+2p^2q-2q^3$; $(2x-y)(2x+y)(x-4y)(x+4y)$. (3) (i.) $\dfrac{1}{x+3}$, (ii.) $\dfrac{a^2(a^2-1)}{a^5-a^3-1}$. (4) (i.) $2\frac12$; (ii.) $x=-\frac14$, $y=4$. (5) (i.) $1+\sqrt{3}+\sqrt{6}$; (ii.) $a^{\frac38}$. (6) $p-1$ or q; $x^2-(4a-5b)x-20ab$. (8) A 12s. a ton, B 10s. a ton; carriage, A, 3s. a ton, B, 4s. a ton. (9) 358. (10) 80. (11) (i.) $\dfrac18-\dfrac{1}{8(2n+1)}$; $\dfrac{e^{-1}}{2}$.

JUNIOR OXFORD LOCAL EXAMINATION, JULY, 1900.

Monthly Test Papers, No. 6.

SIX test papers in the ten most popular subjects for the Junior Oxford Local Examination in July, 1900, have been specially prepared for us by teachers with a large experience of the requirements of the examinations. The last of the series is given below. Copies of the papers in any of the subjects can be obtained in a form suitable for distribution in class. The reprinted papers are sold in packets of twenty-five, at a cost of 6d. net. for each subject. The papers may be ordered through a bookseller, or they may be obtained (post free) from the editors of THE SCHOOL WORLD, but in the latter case all orders *must be prepaid*. Copies of the papers which have previously appeared this year can still be obtained.

Arithmetic.

(This test covers the syllabus of the examination.)

(1) A sum of money amounting to £850 16s. 3d. is distributed equally amongst a certain number of people; if each receives £14 3s. 7¼d., how many people are there?

(2) Simplify:—(i.) 3[illegible] of 2[illegible] ÷ (3[illegible] − 2[illegible]);

(ii.) (·4137 − ·380792) ÷ 1·732.

(3) Explain why ½ of ¼ = ⅛.

(4) Find the value of ·037109375 of 1 cwt.

(5) Reduce 5 miles 3 furlongs 13 poles 2 yards to feet.

(6) The rent of a house is £120; what will be the total expense to an occupier if, in addition to the rent, he has to pay taxes to the amount of 4s. 9½d. in the £ on his rent?

(7) It takes 96 men 6 days to build a certain length of wall; how long would it have taken had 24 of the men been absent?

(8) Find the square root of $173\frac{1}{169}$ and of 169·442289.

(9) A boy does examination papers in arithmetic, algebra and Euclid and scores 210 marks out of 300; if 100 marks be the maximum for each paper, and his marks in arithmetic be five-sixths of his marks in algebra and his marks in algebra twice his marks in Euclid, how many marks did he score in each subject?

(10) An open tank, whose external measurements are 4 ft. 8 in. long, 2 ft. 6 in. wide and 2 ft. deep, is made of material one inch thick; find the weight of sand which it will contain, if 21 cubic feet of sand weigh one ton.

(11) The present worth of a bill of £546 15s. 3d. due nine months hence is £527; what must be the rate of discount, reckoning Simple Interest?

(12) A person invests £2,304 in a 3¾ per cent. stock at 96; he sells out when the stock has fallen to 90, and re-invests in a 4½ per cent. stock. What must be the price of this latter stock that his income may be increased by £6?

(13) A dealer receives from the manufacturer an article at a certain price; if he marks the article at such a price that he can give 10 per cent. discount for cash and still have 10 per cent. profit, and if also the manufacturer makes a profit of 25 per cent. on the cost of the manufacture, what proportion does the marked price bear to the cost of manufacture?

Answers.

(1) 60. (2) (i.) $10\frac{9}{11}$; (ii.) ·019. (4) 4 lbs. 2½ oz. (5) 28,600½ feet. (6) £148 15s. (7) 8 days. (8) $13\frac{2}{13}$; 13·017. (9) Arith. 75, Alg. 90, Euc. 45. (10) $\frac{23}{24}$ ton. (11) 5%. (12) 101¼. (13) 55 : 36.

Old Testament—Genesis.

(1) What followed the settlement of Joseph's brethren in Egypt? Where was the land of Goshen?

(2) With what important events in the Book of Genesis is Beersheba associated? Where is it situated?

(3) Describe the blessing of Pharaoah by Jacob. What was its significance?

(4) "Few and evil have the days of the years of my life been." Discuss Jacob's estimate of his life.

(5) What did the blessing of Manasseh and Ephraim signify?

State briefly the after history of the tribes which bore those names.

(6) Give the final blessings of Jacob on each of his sons, and compare them with the predictions of their birth.

(7) Describe the final scenes in the life of Joseph.

New Testament—St. Luke.

(1) Write a short sketch of the history of the Temple. Give our Lord's prediction of its fall, and state in what way that prediction is held to be fulfilled. Explain "the times of the Gentiles."

(2) Discuss the character of St. Peter as his history is recorded in this Gospel.

(3) Explain the constitution of the Sanhedrim. What relations did it hold to the Roman Executive? How did it conduct the trial of Jesus? How did the charge against him differ in the two courts?

(4) State all you know about Pontius Pilate.

(5) Describe the appearances of Christ after His Resurrection.

(6) "The Gospel of S. Luke is the most beautiful book that there is." Can you support this statement?

English Grammar.

REVISIONAL.

(1) Change into Adjectives or Adverbs the phrases in italics:—

(*a*) He was a man *without principle.*

(*b*) They resolved to secure him *without delay.*

(*c*) Most of the soldiers returned *to their homes.*

Can an Adverb modify a sentence?

(2) Illustrate the various uses of the Possessive case.

(3) Give a concise explanation of verbal forms in *ing*.

(4) Parse fully:—"I bade you never speak again of him."

(5) Correct, where necessary, the following:—

(*a*) I do not think he will come.

(*b*) Each sprang to their feet.

(*c*) Iridium is the hardest of all other metals.

(*d*) None of these pens is suitable.

(6) Explain the meaning of:—*Defective verb, subjective complement, cognate object, indirect question, simile, tautology.*

(7) Analyse:—"At the same time, it is impossible not to blame the complacent manner in which the misery was ignored, and the occasional success of individual merchants and contractors regarded as evidences of national prosperity."

English History.

(VI. SPECIAL PERIOD (*b*) 1347-1377.)

Not more than **five** *questions to be attempted.*

(1) Give some account of the principal laws passed during the ten years which followed the battle of Cressy. Why was the war with France in abeyance during most of that period?

(2) Write a life of *either* the Black Prince *or* John Wyclif.

(3) During the reign of Edward III. the relations (*a*) between clergy and laity in England, (*b*) between the King of England and the Papacy, were often unfriendly. Illustrate and explain either of these facts.

(4) Describe *either* (*a*) the campaign, *or* (*b*) the battle of Poitiers. Draw a sketch map, if possible, to illustrate your answer.

(5) State briefly the terms of the *Treaty of Bretigny*. Give reasons for the English success before, and failure after, that treaty.

(6) Give an account of *either* (*a*) the doings of the "Good Parliament," *or* (*b*) the composition of Parliament in the latter days of Edward III.

As You Like It.

(1) How was it that Rosalind did not reveal herself earlier to her father, and why does her final disclosure appear to excite little surprise?

(2) Distinguish, as far as possible, all the speeches and behaviour which are not natural to Rosalind, but belong to her assumed part of a boy.

(3) When Shakespeare wrote this play, what do you imagine his attitude of mind to have been to:—

(*a*) Town and country life:

(*b*) Love:

(*c*) The idea that human life is contemptible?

(4) Explain the following expressions:

Be naught awhile; a lie seven times removed; like Juno's swans; with indented glides; Jove in a thatched house; Sport! of what colour?—a diverted blood; right butter-woman's rank to market; capable impressure; Hercules be thy speed!

(5) How are the following words used:—

Censure; bugle; prevent; unquestionable; saws; manage?

Geography.

REVISIONAL.

(1) Draw a map of (*a*) Scotland, or (*b*) Canada, or (*c*) Italy, marking six towns, the longest river, two capes, the chief mountains. Give the longitude and latitude of the capital.

(2) What are the chief agricultural products of Italy and Canada?

(3) Explain the terms:—Glacier, Geyser, Ghaut, Sargasso Sea, the Gulf Stream. Describe any one of these.

(4) What are the geographical limits in Europe of the cultivation of the vine? Whence do we import flax, wheat, coffee, tea, cigars, and to what ports does each come?

(5) Where exactly are:—Buluwayo, Lima, Upsala, Yellowstone Park, Simla, Cape Horn?

(6) Describe the course of (*a*) the St. Lawrence, or (*b*) the Po, or (*c*) the Clyde.

(7) Draw a sketch-map of the south coast of England, naming the chief inlets, capes and the most important seaports.

(8) What is the Balkan peninsula? Give the names of the states and their capitals.

(9) Which are (*a*) the hottest, (*b*) the coldest, (*c*) the most rainless districts of the earth. Give reasons for your answers.

French.

(1) Translate into French:—

(*a*) How are you? It's more than three years since we last met.

(*b*) Go to the butcher's and tell him to send me a calf's head.

(*c*) Your father and I have long been friends.

(*d*) That funny man has green eyes, red hair, a yellow coat and blue stockings.

(*e*) Why are you so late? I am afraid I must punish you.

(*f*) You are the laziest girl I have ever seen.

(2) Translate into English:—

Depuis plus de trois mois Bonaparte était sans nouvelles de l'Europe quand, à son retour de Saint-Jean-d'Acre, il envoya un parlementaire à l'amiral ottoman, sous prétexte de traiter l'échange des prisonniers, mais en réalité dans l'espoir que Sir Sydney Smith arrêterait cet officier au passage et lui ferait connaître les événements récents, si, comme on pouvait le prévoir, ils étaient malheureux pour la République. Le général calculait juste. Sir Sydney fit monter le parlementaire à son bord et l'y reçut honorablement. Ayant lié conversation, il ne tarda pas à l'assurer que l'armée de Syrie était sans dépêches ni avis d'aucune sorte. Il lui montra les journaux ouverts sur la table et, avec une courtoisie perfide, le pria de les emporter.

(3) Give the rule for the comparison of adjectives in French. Compare *gentil*, *bon*, *petit*.

(4) Give the French for *who*, *whom*, *which*, *what*, when (i.) relative and (ii.) interrogative. Translate:—The lady who came. Who saw him? That is what he said. What did he say? It is he of whom I was speaking. Which is the man who sang?

(5) Put into French:—For instance. Three times three are nine. That goes without saying. He almost cut his finger. She tried in vain to speak.

(6) Write the second person singular and third person plural of the imperfect and future indicative and present subjunctive of—*vouloir*, *punir*, *vaincre*, *prendre* and *souffrir*.

(7) For those only who offer "Colomba" (pp. 132-end).

(i.) Translate into English:—

(*a*) p. 132, ll. 5-14. Le chirurgien arriva . . . . ses intimes amis.

(*b*) p. 141, ll. 14-22. Il siffla deux fois . . . . tué cent fois.

(*c*) p. 153, ll. 9-19. Et elle s'approcha . . . . de sa poitrine.

(ii.) Write notes on—*faire jouer la batterie, à plusieurs reprises, n'en pouvoir plus, porte-respect, le mauvais œil.*

(8) For those only who offer "L'homme à l'oreille cassée" (pp. 167-end).

(i.) Translate into English:—

(*a*) p. 170, ll. 9-16. Il se fit conduire . . . . chapitre précédent.

(*b*) p. 181, ll. 15-22. Si Gros-Pierre . . . . une belle bataille.

(*c*) p. 197, ll. 1-7. Ne l'impatiente pas . . . . une lettre du cabinet.

(ii.) Write notes on—*de guerre lasse, écrémé, asile des lois, papier timbré, un festin pantagruélique.*

Algebra.

(*This test covers the syllabus of the examination.*)

(1) Add together $2[3x-(4-5x^2)]$, $(x-1)(2x+3)$ and $2-3x(4x-7)-7(4x-3)$.

(2) Multiply $a^3-3a^2b+7ab^2-4b^3$ by $a^3+3a^2b+5ab^2-2b^3$.

(3) Find the G.C.M. of

$$2x^4-5x^3y+5x^2y^2-3xy^3 \text{ and } 2x^4-2x^3y+x^2y^2+xy^3-y^4.$$

(4) A train travels a miles at the rate of b miles an hour; for the next c miles, the remainder of the journey, its speed is d miles an hour; how many hours does it take to complete the journey, and what is its average speed?

(5) Simplify $\dfrac{x+2a}{2x^2-7ax+3a^2}-\dfrac{x-3a}{2x^2+3ax-2a^2}$.

(6) Solve the equations:—

$$\text{(i.)}\quad \frac{9}{3x+2}-\frac{3-2x}{x+1}=2;$$

$$\text{(ii.)}\quad \frac{3x+2y}{a}=\frac{8x-3y}{b}=5.$$

(7) A can cycle round a circular track twelve times while B cycles eleven times; if a distance of fifty miles, of which A rides the first 28 and B the remaining 22, is covered in 2 hrs. 10 mins., how fast does each cyclist ride?

(8) Find the square root of

$$\frac{1}{4}(4x^4-4x^3+x^2)+\frac{1}{9}(6x^2-3x+1).$$

(9) What values of x will satisfy the equation

$$\frac{2}{3+x}-\frac{3}{2-x}=\frac{5}{4}?$$

Form the equation whose roots are $\frac{a}{b}$ and $\frac{b}{a}$.

(10) Simplify $(a^{-1}+b^{-1})^{\frac{1}{2}}\times\sqrt{a^2-b^2}\div\dfrac{(a-b)^{\frac{3}{2}}}{ab}$; and find the square root of $9-4\sqrt{5}$.

(11) (i.) How many terms of the series $16+13+10+\ldots$ amount to 49?

(ii.) Sum to infinity the series $1+x+x^2+x^3+\ldots$; and show that

$$(1+x+x^2+x^3+\ldots)(1-x+x^2-x^3+\ldots)=1+x^2+x^4+x^6+\ldots$$

(12) Find the number of ways in which n different things can be taken r at a time.

In how many ways can a class of 20 boys be arranged in three divisions, one of which is to contain 9 boys and another 5?

(13) (i.) How many terms are there in the expansion of $(1+x^2)^{2n}$? Write down the middle term.

(ii.) Find the coefficient of x^5 in the expansion of $(1-3x^2)^8(1-x)^6$.

Answers.

(1) 12. (2) $a^6+3a^4b^2+29a^2b^4-34ab^5+8b^6$. (3) x^2-xy+y^2.

(4) $\left(\frac{a}{b}+\frac{c}{d}\right)$ hours; $\dfrac{(a+c)bd}{ad+bc}$ miles per hour.

(5) $\dfrac{5a}{(x-3a)(x+2a)}$. (6) (i.) $-\frac{1}{6}$; (ii.) $x=\dfrac{3a+2b}{5}$, $y=\dfrac{8a-3b}{5}$. (7) 6. (8) $x^2-\frac{x}{2}+\frac{1}{3}$. (9) 5 or -2; $abx^2-(a^2+b^2)x+ab=0$. (10) $\dfrac{(a+b)\sqrt{ab}}{a-b}$; $2-\sqrt{5}$.

(11) (i.) 7; (ii.) $\dfrac{1}{1-x}$. (12) $\dfrac{\underline{|20}}{\underline{|9}\;\underline{|5}\;\underline{|6}}$.

(13) (i.) $2n+1$, $\dfrac{\underline{|2n}}{\underline{|n}\;\underline{|n}}x^{2n}$; (ii.) -141.

Euclid.

(*Books I.—IV. and VI.*)

(1) Define a superficies, a diameter of a circle, a square and an isosceles triangle.

(2) If one straight line stand upon another straight line, the adjacent angles shall be either two right angles or together equal to two right angles.

(3) If from the ends of a side of a triangle there be drawn two straight lines to a point within the triangle, then these straight lines shall be less than the other two sides, but shall contain a greater angle.

(4) If the square described on one side of a triangle be equal to the sum of the squares described on the other two sides, then the angle contained by these two sides shall be a right angle.

(5) In an obtuse-angled triangle, if a perpendicular is drawn from either of the acute angles to the opposite side produced, the square on the side subtending the obtuse angle is greater than the squares on the sides containing the obtuse angle by twice the rectangle contained by the side on which, when produced, the perpendicular falls, and the line intercepted without the triangle between the perpendicular and the obtuse angle.

(6) Draw a tangent to a circle from a given point without it,

Or—If two triangles have two sides of the one equal to two sides of the other, each to each, and have also their bases or third sides equal, then shall the triangles be equal in all respects.

(7) Describe an isosceles triangle having each of the angles at the base double of the third angle.

Or—Equal triangles on the same base, and on the same side of it, are between the same parallels.

(8) In a right-angled triangle if a perpendicular be drawn from the right angle to the hypotenuse, the triangles on each side of it are similar to the whole triangle and to one another.

Or—If a straight line is bisected and produced to any point, the rectangle contained by the whole line thus produced, and the part of it produced, together with the square on half the line bisected, is equal to the square on the straight line made up of the half and the part produced.

(9) ABC is a triangle and D the middle point of the base BC; if P be any point in AD and PB, PC be joined, then if AB be greater than AC, PB is greater than PC.

(10) From any point in the base of an isosceles triangle, straight lines are drawn parallel to the sides; show that they divide the sides of the triangle into equal segments.

(11) AB and CD are two chords of a circle ABC, intersecting at right angles; if the diameter through A meets the circumference again in F, show that DF equals CB.

(12) ABC is any triangle, and through O the middle point of AC a straight line PQR is drawn meeting BA produced in P, BC in Q, and a straight line drawn through B parallel to AC in R; show that OP is to PR as OQ is to QR.

PRELIMINARY OXFORD LOCAL EXAMINATION, JULY, 1900.

Monthly Test Papers.—No. 6.

THE increasing importance of the Preliminary Local Examinations of both Oxford and Cambridge has made it necessary to take into account the work of the teachers engaged in preparing pupils for these examinations. We have, consequently, had six test papers in each of the seven most important subjects drawn up by experienced teachers, and the last is printed this month. Copies of the questions in any subject dealt with can be obtained in a form suitable for distribution in class. Particulars will be found on page 233, in connection with the Junior Local Examination.

Arithmetic.

(1) Divide nine million nine hundred and eighty-nine thousand and one by nine hundred and ninety-nine; express the quotient in words.

(2) Multiply £142 13s. 5¼d. by 107.

(3) How many ounces are there in 24 tons 4 cwt?

(4) Simplify:—(i.) $3\frac{2}{7} + 4\frac{1}{21} - 5\frac{9}{14}$;
(ii.) $4\frac{1}{15} - 3\frac{7}{9} \div 5\frac{2}{3}$.

(5) Multiply:—23·715 by 0027.

(6) If three yards of silk cost £1 16s., how many yards can be bought for £12?

(7) What is the value of 2 cwt. 1 qr. 21 lbs. of sugar at 17s. 8d. per cwt.?

(8) Find the Simple Interest on £406 8s. for 2½ years at 3¾ per cent. per annum.

Answers.

(1) 9,999. (2) £15,265 17s. 9¾d. (3) 867,328. (4) (i.) $1\frac{29}{42}$; (ii.) $3\frac{2}{5}$d. (5) 0640305. (6) 20 yards. (7) £2 3s. 0¾d. (8) £38 2s.

New Testament—St. Luke.

(1) Give some account of the Passover. Who were the "Captains" to whom Judas went?

(2) Relate the warning administered by Jesus to Peter, and say why it was given.

(3) Describe the trial and condemnation of Jesus.

(4) Draw a map of Jerusalem and the surrounding country, indicating the scenes of the last events in the life of Jesus.

(5) "Pilate and Herod were made friends together." Explain this.

(6) Who were Joseph of Arimathea, Barabbas, Tiberius, Malchus?

(7) In what words did Jesus assert that Ps. cxviii. applied to Him?

English History.

(1697-1715.)

Not more than **five** *questions to be attempted.*

(1) State briefly but clearly:—

(*a*) The general object of the great war in Queen Anne's reign.

(*b*) Why England took part in that war.

(*c*) In what different countries the fighting took place.

(*d*) What England gained by the war.

(2) "Good Queen Anne." Give reasons for and against describing Queen Anne as "good."

(3) Write *either* a life of Marlborough, *or* short lives of any other *two* notable personages in Queen Anne's reign.

(4) Give an account of *either* the *Act of Settlement* (1701), *or* the *Act of Union* (1707).

(5) How was it that George of Hanover (*a*) was chosen to succeed, (*b*) actually did succeed Queen Anne. What other claimants to the British thrones were there besides George?

(6) Make a list of George's dominions after his accession to the British thrones.

English Grammar.

REVISIONAL.

(1) Parse fully the Adjectives and Verbs in the following:—"Many of the finest books were those antiquated volumes that have since been bought by the original owner, who is now in easier circumstances."

(2) Define and give examples of:—Adverb, Passive Voice, Imperative Mood.

(3) What are the chief rules concerning the formation of Plural Nouns?

(4) Mention three words that may belong to more than one of the parts of speech, and give instances of their use.

(5) Write in your own words the meaning of the following:—

Come, see the *Dolphin's* anchor forged, 'tis at a white heat now;
The bellows ceased, the flames decreased, though on the forge's brow
The little flames still fitfully play through the sable mound,
And fitfully you still may see the grim smiths ranking round
All clad in leathern panoply, their broad hands only bare;
Some rest upon their sledges here, some work the windlass there.

Robinson Crusoe.

(1) Describe Crusoe's dress on the island, his dwelling, and the means which he took for its protection.

(2) What remarkable coincidences of events does Crusoe mention, which he considers an indication of Providence?

(3) Give some account of the animal and vegetable life of the island.

(4) It has been said that the story becomes less interesting when Friday appears. Try to account for this.

(5) Between what dates did Crusoe keep a memorandum of the events of each day? Give the most important points in it. How does he divide the year of that quarter of the world into seasons?

Geography.

REVISIONAL.

(1) State the meaning of the following terms, and give an instance of each:—Volcano, geysir, atoll, isthmus.

(2) What do the following countries export to us:—China, India, Portugal, New Zealand, Russia?

(3) Name the countries of South America south of the Equator and their capitals.

(4) Draw a map of Scotland south of the mouths of the Clyde and Forth, inserting these names:—Glasgow, Edinburgh, Ayr, Lowther Hills, the Tweed, and mark the boundaries of the five southern countries.

(5) Draw a map of the basin of the Po, inserting the names of the chief centres of industry.

(6) Where are Sydney, Kimberley, Bombay, Athens, Archangel, Queenstown. For what is each noted?

French.

(1) Translate into French:—

(*a*) I am learning (*apprendre*) my lessons. Have you finished yours?

(*b*) I am as tall as you, but I am not so strong.

(*c*) In the holidays (*vacances*) I don't go to bed at nine o'clock every night. [To go to bed = *se coucher*.]

(*d*) The black horse and the white dog are both mine.

(*e*) We are going to row (*ramer*) on the river. Will you come with us?

(2) Conjugate in the singular the present and future indicative of *aller*, *devoir*, *dire*, and in the plural the imperfect indicative and present subjunctive of *faire*, *regarder*, *servir*. Give the present and past participles of each of these six verbs.

(3) Compare *bon*, *bien*, *mauvais* and *mal*. What is the general rule for the formation of the comparative of adjectives and adverbs? Decline *lequel* in full.

(4) Translate into English:—

L'ogre avait sept filles qui n'étaient encore que des enfants; ces *petites* ogresses avaient toutes le teint fort beau, parce qu'elles mangeaient de la chair *fraîche* comme leur père; mais elles avaient de petits *yeux* gris et tout ronds, le *nez* crochu, et une fort *grande* bouche avec de *longues* dents fort *aigues* et fort *éloignées* l'une de l'autre; elles n'étaient pas encore fort *méchantes*, mais elles *promettaient* beaucoup, car elles mordaient déjà les petits enfants pour en sucer le sang.

(5) Give the masculine singular form of all the adjectives in italics in the above passage. Give the singular of *yeux* and the plural of *nez*. Write the present infinitive, perfect participle and second singular pres. ind. of *promettaient*.

(6) Translate into English:—

(*a*) Je ne sais à quoi il tient qui je ne te mange aussi; bien t'en prend d'être une *vieille* bête! Voilà du gibier qui vient bien à propos pour traiter trois ogres de *mes amis* qui doivent me venir voir ces jours-ci.

(*b*) Bonnes gens qui fauchez, si vous ne dites au roi que le pré que vous fauchez *appartient* à M. le marquis de Carabas, vous serez tous hachés menu comme chair à pâté.

(*c*) Après avoir un peu repris ses sens, elle ramassa la clef, referma la porte, et monta à sa chambre pour se remettre un peu; mais elle n'en pouvait venir à bout, tant elle était *émue*.

What is the masculine singular of *vieille*, the feminine singular of *mes amis*, and the present infinitive of *émue*? Conjugate in full the future of *appartient*.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

How to Use the Raw Material of History.

THE article "How to Use the Raw Material of History," in this month's SCHOOL WORLD, has interested me greatly. I am delighted to see any attempt to get history out of the rut of mere words and abstractions, and I have often wished for the introduction of something of the nature of "practical" work, whether experimental or observational, into the teaching of a subject which is usually little more than getting up "book work." I have, therefore, no desire to criticise the article; but I should be much obliged if the author would furnish further information on one or two points which have puzzled me, and may, perhaps, have puzzled other readers of THE SCHOOL WORLD.

(1) The author of the article is one of the authors of "Over-Pressure," whose aim is not to "stock" nor to "mould" the mind, but rather to "discipline it according to its own laws." Are we right to infer, from putting together the article and the book, that Mr. Beatty considers the study and imitation of "Celtic" art to be equally suitable for every mind?

(2) "The child understands the simple, not the complex." How does Mr. Beatty persuade himself and his young pupils that "race" and "race-types" are simple and not complex ideas?

(3) "Realisation of the distinctive characteristics of dominant race-types is the guiding line which will enable the child to follow intelligently the devious windings of the maze of human action." Quite recently Dr. Reich dazzled Cambridge audiences with some lectures, in which he "proved" that the influence of "race" is as nothing compared with that of "geographical environment." How is the ordinary teacher to choose between these apparently conflicting authoritative statements?

(4) "The chief types in modern European history are the Celt, Roman and Norseman. What the child needs primarily are clear mind-pictures of each." Here obviously two types are given, the Roman Celt and the Norseman Celt. Elsewhere Mr. Beatty speaks of "the three chief types." Which is the correct number? Which be they, and why are they "chief?" How does Mr. Beatty obtain from the somewhat discordant utterances of philologers and physiologists a "clear mind-picture" of the distinctive characters, physical and mental, of each of his chosen race-types? And, when he has himself obtained such a "clear mind-picture," how does he contrive to impart it to others without "presenting the child with his own or other people's conclusions?"

I should be much beholden to Mr. Beatty if he would be so good as to answer some of these questions in a way sufficiently simple for me to understand.

C. S. FEARENSIDE.

Clive Vale, Tenison Avenue,
Cambridge,
May 10th, 1900.

I subjoin my notes on the queries contained in Mr. Fearenside's letter of the 10th inst.

(1) It seems to me desirable that the British child should be familiar with objects of early Celtic art, because comparison of the art, arms, buildings and customs of the three chief European race-types is essential to the realisation of their likenesses and differences. Moreover, we have here ancient indigenous material highly characteristic of the Celtic peoples. The value of familiar acquaintance with Celtic design in this connection was made clear to me by F. W. Unger's article on "La Miniature Irlandaise:"—"Si donc nous reconnaissons partout un fonds commun d'art antique, nous observons pourtant un caractère particulier dans l'ornementation irlandaise . . . . Les spirales et l'entrelacement tressé forment donc l'élément national dans l'ornementation irlandaise; elles remontent jusqu'à l'époque païenne où elles étaient en usage chez les Celtes et aussi chez les Germains, et formaient presque les seuls ornements des ustensiles que nous trouvons dans les tombes païennes de l'époque de bronze . . . . Là où Britannes et Irlandais ont inventé, la tendance nationale de leur fantaisie a gardé la haute main et imprimé aux dessins et aux ornements ce caractère original qui distingue le style irlandais de tout autre . . . . Cette originalité des Celtes se rencontre dans leurs plus anciennes créations poétiques, dans la forme presque architecturale des triades Galloises, et dans l'imagination luxuriante des contes irlandais."

If, as is now universally conceded, the Celtic element is an important factor in our own civilisation, familiarity with the objects of Celtic art—not "the study and imitation of Celtic art"—is surely a necessary preparation for the subsequent history of the Celtic influence.

(2) The notion of the difference of race-types is a relatively simple idea; the idea of race origins is highly complex. It is with the former, not the latter, that I am concerned. The attempt to harmonise the "somewhat discordant utterances of philologers and physiologists" referred to in query (4) is interesting to the adult intelligence, but certainly not to the child. A quite simple and clear conception of the race-type may be given by the pictures of the large-limbed, fair-haired Celt referred to in my article, and by descriptive passages such as that in which Cæsar alludes to their *mirifica corpora.* The descriptions by Cæsar, Strabo, Lucan and Vitruvius are, after all, contemporary references, and, together with the numerous concurrent testimonies of the Celtic MSS., may be used as trustworthy evidence of the great stature and physical beauty of the Celtic inhabitants of Great Britain and Gaul, *e.g.*, the graphic description of Medb in the TainBo Chuailque agrees substantially with that of Boadicea by Dion Cassius; both are spirited, and leave the child impressed with the physical appearance of the Celt in much the same way as contemporary Romans appear to have been. To the child the testimony of an eye-witness is worth pages of philologers' and physiologists' conclusions, and such testimony, I humbly suggest, is not at issue with these. No one will be the less able, when the time comes, to keep a level head in dealing with philological and ethnological intricacies because he has a vivid mind-picture of Celtic heroes, Roman legionaries and Viking leaders. To form these relatively simple conceptions, not to balance conflicting anthropological theories, is the task of the teacher during the first period of history teaching.

(3) In reply to this query, I can only say that I see no conflict between my statement and Dr. Reich's conclusions; the one refers to realisation by a child of the salient differences of formed and dominant races, the other to relative values of moulding influences in race development, again a matter with which the young child is not concerned.

(4) This question arises from the fact that the printer has dropped a comma on p. 168, line 10, after "Roman." The types chosen are the Celtic, Roman, and Norse. To indicate how a clear mind-picture can be obtained, either by the teacher or the pupil, I can only point again to historical raw material. Pictures of Celtic, Roman, and Norse ornament, houses, forts, contemporary descriptions of these, and of the sports, mode of warfare, domestic and public customs of these three types give clearly defined ideas without impressing any conclusions. Such treatment will not, it is true, help to unravel the tangle of race-origins, but it will provide material which makes plain the motives of subsequent historical action. As to "why chief?" It would seem that a glance at the history of the evangelisation of Saxon England and the first development of English Chris-

tianity, unaided and unshadowed by Roman organisation, the later modification of Saxondom by the Norman civilisation, itself a product of Gallo-Roman (Celto-Roman) influence on the Norse mind—and the long dominion of the Roman hierarchy and the Latin tongue, should suggest why familiarity with these three types must be of supreme importance to any child of the Empire.

I trust I have been able to make clear my meaning to any reader of THE SCHOOL WORLD who may have been puzzled by the points raised by Mr. Fearenside.

Grande Rocque School, F. BEATTY.
Guernsey,
May 14th, 1900.

What Becomes of Assistant-Masters?

THE question raised by Mr. Johnstone in your last issue will always appear to assistant-masters of prime importance, and, doubtless, there will continue to be these outbursts of indignation at their "perfectly paltry stipends," as your correspondent calls them. But surely that much-maligned law of supply and demand, of which writers of political economy treat, holds good in this case. So long as there are numbers of men leaving the Universities every year with a measure of book-learning, no special aptitude for anything in particular, lacking the necessary funds to take up medicine or law, and no chance in a Civil Service competition, so long will there be plenty of schoolmasters to be obtained at a small salary. There is no other calling in which a man can make a beginning at a living wage without some laborious and lengthy period of preparation. Mr. Johnstone cannot expect to have everything. When a course of training is insisted upon for every secondary schoolmaster, there will be fewer men willing to take up teaching, and salaries will of necessity improve.

If I may be allowed to raise another point, one, which appears to me of greater importance, I would like to ask those of your readers who are able to throw light on a really obscure question—What becomes of Assistant-masters? They certainly do not all become "heads," yet, if my experience is normal, it is a comparatively rare thing to find an assistant-master over forty in a small grammar school or in a private school. In most professions a man is gaining necessary experience up to forty years of age, his period of fruition comes later. This fact appears to make clear an undesirable leakage which robs secondary education of one of its most important aids, viz., experienced assistant-masters. Still, the assistant-masters who give up teaching must do something; what *do* they do?

ERNEST PASKINS.

Newcastle,
May 10th, 1900.

Remuneration of Assistant-Masters.

I WAS very pleased to see a letter on the subject of the "Remuneration of Assistant-Masters in Secondary Schools," and I hope that others may also write, and act, so far as they can, to bring about an improvement. Why do not all the assistants in the country join our excellent Assistant-Masters' Association? They blame us for not doing much for the cause, but it does not occur to them that if they will only rally round the Assistant-Masters' Association, then the financial position of the Association will be strengthened, and we shall be less of a "voice in the wilderness."

It is not the lack of interest in such subjects as the above that prevents our Executive taking further steps, but rather the lack of financial support, and perhaps still more of that firmness and confidence which a large and united Association would produce.

Though we may not care for the ways of the National Union of Teachers in some things, yet we cannot but envy them the possession of that solid phalanx of united and determined men and women who have fought, and are still fighting successfully for what they feel to be their position and rights in the elementary school world.

Then, perhaps, we could suggest that our scales of salaries should be fixed, secure, and known by everyone; and cooks and housemaids would no longer be our superiors in wealth. Then, too, we could ask the Board of Education to require from every Board of Governors (who at present seem so ignorant and apathetic, and practically ignore our existence) an annual form somewhat of the following nature:—

gistered No.	Name	Degre &c.	Head or Assistant.	Age.	Years of service as teacher.	How long in present school.	Salary—School duties.	O t of s duti	Total.
E.G								£	
2687	Rev. W. L. Sweatem	M.A., F.C.S.	Head	54	30	25	250† 800 C.F.*	300	
	R. Jones*..	B.A., C.M.†	Assist.	43	22	16			
27831	J. Smith ..	T.C.M. A.C.P.	"	32	16	9			

..F.=Capitation fees, which form so large a portion of the headmaster's income. † C.M.—Certificated master.

The above form to be laid before the governors annually, signed, and forwarded to the Board of Education.

SOUTHRON.

Manchester,
May 14th, 1900.

The Training of Elementary Teachers.

MR. SOMERSET BATEMAN'S statement that pupil-teachers' schools ought to be grafted on an already existing secondary school reads well enough, but at present there is so little in common in the systems of instruction, the subjects studied, and the aims of the pupils, that the thing seems to me scarcely possible in practice. It is so easy to make general suggestions, so difficult to provide working programmes. Pupil-teachers must teach for a certain number of hours per day, or per week. It is clear, therefore, that they could not be attached to one of the ordinary forms of a secondary school without seriously interfering with the work of that form. If they constituted a form by themselves it is difficult to see what opportunity they would have of benefiting by attendance in the same building as the school of which they would form but a doubtful part. It is beside the question to refer to the advantage the pupil-teacher would derive from breathing a new atmosphere until the difficulty referred to is cleared up.

Bradford, F. R. WILCOX.
May 7th, 1900.

Nature Study and Modelling in Plastic Material.

IN reading the article on "Nature Study in Schools" in your magazine, THE SCHOOL WORLD, it was strongly impressed upon me how helpful and useful it would be to the pupil and the teacher, after the out-door lesson, to copy in plastic material some of the objects seen and discussed. "Plasticine" being clean and always "*fit*," can be used in any place, at any time, and without preparation; the child with this would be impelled to try to copy nature. I know of nothing that would so quickly excite the interest in striving to imitate what had been seen, and it would induce closer observation and be an increasing delight to the pupils, for if when modelling they found they could not remember the exact thing, they would go to nature again until they had mastered their difficulties. For instance, "The cat with five claws on forefoot and four only on each hind foot" would never be forgotten, if the child finds this out for himself or herself in trying to model a cat; and it will be the same with anything the young modeller undertakes—a flower, a leaf, bird or insect. The *modelling* of these forms will have a much greater interest than drawing them, and is, indeed, easier. Then plans of the route taken can also be made with plastic material, where the road takes a turn, the stile or gate to be surmounted, a river to be marked in and crossed over by a bridge, or objects of special interest made note of. These and the many lessons given on the objects in "Nature Study" will be greatly enhanced, impressed and remembered by the modelling of them after. Memory and observation will grow and be strengthened with every walk taken.

B. CAMBRIDGE.

Hartley House, Bath,
May, 1900.

The Employment of the Pupil's Leisure.

I AM dissatisfied with the provision which cricket makes for certain boys, in a school with which I am connected, in the direction of adding enjoyment and interest to life. I have come across near-sighted boys who cannot field, and others, who with no amount of coaching, can learn "to keep a straight bat." The other fellows on the field, I know, laugh at these unfortunates, who for their part are learning to loathe cricket and incidentally to dislike games. Yet they are intellectually above the average, and from their physique, I can tell they are just the boys who want outdoor exercise. Can you or your readers make any suggestion that will assist me? I feel sure that other masters must have experienced the same difficulty.

R. WHARTON-TIVER.

Wendover,
April 30th, 1900.

PRIZE COMPETITION.

Competition No. 11.—English Essays.

WE offer four prizes for the best English essays on one of the subjects specified below. Two prizes are open to competition by boys or girls who are under sixteen years of age on June 9th, 1900, and two prizes by boys or girls over sixteen years of age on the same date.

The first prize in each division will be books to the published value of half-a-guinea, and the second prize books to the published value of five shillings. In addition, the teacher of the first-prize winner in each class may select books to the published value of half-a-guinea for distribution as prizes for essay writing among the pupils of his or her form. In each case the books must be chosen from the catalogues of Messrs. Macmillan & Co., Limited.

The rules for the competition are as follows:—

(i.) Every packet of essays sent by the teacher of a form, or separate essay sent by a private student, must be accompanied by a coupon (p. ix.).

(ii.) No essay received after Saturday, June 9th, 1900, will be examined.

(iii.) The decision of the Editors, which will be published in the July, 1900, number, to be final.

(iv.) The competitor's age must be stated on every essay, which must also be endorsed by the teacher or other responsible person, certifying it to be the unaided work of the competitor.

(v.) Replies should be addressed to the Editors, THE SCHOOL WORLD, St. Martin's Street, London, W.C.

(vi.) The essay should not exceed 500 words, and may be written on *any one* of the subjects mentioned in either of the following divisions:—

Junior Class.—For competitors under sixteen years of age:—

The Uses of Books.
Holiday Tasks.
Soldiers.
Prevention is better than Cure.
India.
Comparative Advantages of Town and Country Life.

Senior Class.—For competitors over sixteen years of age:—

Polar Exploration.
Patriotism.
Wild Flowers.
Knowledge is Power.
Newspapers.
Alfred the Great.

OUR CHESS COLUMN.

No 18.

A GENTLEMAN, who wishes his name not to appear, sends me the following letter:—"I am very interested in the study and promotion of chess, and have often thought (with Mason) what a good thing it would be if prizes were given for original and good examples of 'winning play.' I should, therefore, like to offer a small prize, such as Mason's 'Social Chess' (or two prizes, if the competition were keen enough), for competition amongst readers of THE SCHOOL WORLD for the best example of winning play. My idea of such a competition is as follows:—A whole game should be sent, divided off into three portions. (*a*) The beginning, leading up to the critical part; this part need not be brilliantly played, but there should be no absolute blunder; (*b*) the winning play, showing the mistake (which must not be a blunder) by which the opposing party is enabled to win; (*c*) an ending. The end should be capable of variations, in all of which the side which has got ahead in (*b*) should win. But no variations should be sent in competition. There should be no blunders in the ending sent in. I enclose a game, showing fairly well what I mean:—

	" WHITE.		" BLACK.	
1.	P—K4.	1.	P—K4.	Beginning.
2.	Kt—KB3.	2.	Kt—QB3.	
3.	Kt—B3.	3.	B—B4.	
4.	P—QR3.	4.	P—Q3.	
5.	P—QKt4.	5.	B—Kt3.	
6.	P—Q3.	6.	B—K3.	
7.	B—Kt5.	7.	Q—Q2.	
8.	Kt—Q5.	8.	P—KB3.	
9.	B—R4.	9.	KKt—K2.	
10.	Kt—Q2.	10.	Kt x Kt.	
11.	P x Kt.	11.	B x P.	
12.	Q—R5 (ch.).	12.	B—B2.	
13.	Q—B3.	13.	Castles KR.	
14.	Q—KKt3.	14.	B—K3.	

“WHITE (*continued*).		‘BLACK (*continued*).		
15.	Kt—K4.	15.	P—B4.	
16.	Kt—B6 (ch.).	16.	R x Kt.	
17.	B x R.	17.	Kt—Q5.	Winning Play.
18.	Castles (?)	18.	R—KB1.	
19.	B—R4.	19.	Q—R5.	
20.	K—Q2.	20.	Q x P (ch.)	
21.	K—K1.	21.	B—Kt6.	
22.	P—B3.	22.	Q x R (ch.).	
23.	K—B3.	23.	Kt—B7 (ch.).	E
24.	P—Q4.	24.	B x P (mate).	

“A few notes may be of service to competitors in explanation of what is intended.

“Moves 1-12 constitute the ‘beginning.’ White makes one or two weak moves, but there are no absolute blunders.

“Moves 15-19 give Black a won game. At 18 White should not have castled. This was a mistake, but not a ‘slip’ or blunder.

“Moves 20-24 show one way of winning, and contain no blunder.”

Now I hope we shall have a good entry for the prize thus generously offered. Competitors must play games with their friends and send in the game they like best. Only one game may be sent in by each competitor. The giver of the prize will “weed out” the three best, which I shall then finally consider. This competition will remain open until October 30th.

For our competition this month we will take the above game. Competitors are to give three more variations of this particular end-game. The usual prizes will be awarded.

RULES.

1.—Solutions to be sent on post cards.
2.—Give name, date, age and address. (Age limit, 21.)
3.—Solutions to be received on or before June 12th.
4.—Address:

The Chess Editor,
THE SCHOOL WORLD,
St. Martin's Street,
London, W.C.

Result of May Competition.

“Six Lessons” is awarded to Messrs. Shillingford, Colman, Mellows, Kettle.

SCORES UP TO DATE.

Twenty-four points: Messrs. Dick, Poyser.
Twenty-three points: F. H. E. Leonard.
Twenty points: Messrs. Mellows, Russell.
Fifteen points: E. H. Kettle.
Five points: E. H. Colman.
For other scores see April number.

CALENDAR.

[*Items for the July Calendar must be received by June 21st*, 1900.]

June, 1900.

Tuesday,	5th.—	Scholarship Examinations begin at Cheltenham College and Durham School.
		Scholarship Examinations begin in (*a*) Classics at St. John's and Jesus Colleges, Oxford; (*b*) Mathematics at Merton, Pembroke, and Hertford Colleges, Oxford.
		Edinburgh University Local Examinations begin.
Wednesday,	6th.—	Return forms for College of Preceptors' Diploma Examination.
Saturday,	9th.	London Geological Field Class: Excursion to Bedford.
Monday,	11th.—	London University Matriculation Examination begins.
		University of Wales, Second Matriculation Examination begins.
		Preliminary Examination of Institute of Chartered Accountants begins.
Tuesday,	12th.—	Scholarship Examination begins at Tonbridge School.
		Scholarship Examinations begin in (*a*) Classics at Exeter College, Oxford; (*b*) History at Christ Church, Oxford.
		Examinations of the Irish Intermediate Examination.
Wednesday,	13th.—	Junior Scholarship Examinations begin at Merchant Taylors' School, E.C.
Saturday,	16th.—	London Geological Field Class: Excursion to Godalming.
Monday,	18th.—	Aberdeen University Local Examinations begin.
		Cambridge University Higher Local Examination begins.
Tuesday,	19th.—	Scholarship Examination begins at University College School.
		Scholarship Examination in Divinity begins at St. John's College, Oxford.
		Intermediate Examination of Institute of Chartered Accountants.
Thursday,	21st.—	Professor Schechter's Public Lecture on Jewish History at University College, W.C. (6 p.m.)
Saturday,	23rd.—	London Geological Field Class: Excursion to Otford.
		Local Examinations in Musical Knowledge (Theory), Trinity College of Music, London.
Monday,	25th.—	Scholarship Examinations begin at University College, Bristol.
		Examinations of Cambridge Teachers' Training Syndicate begin.
		Pupils' Certificate Examination of College of Preceptors begins.
Tuesday,	26th.—	Scholarship Examinations begin at (*a*) Bath College; (*b*) Christ's College, Brecon; (*c*) Bedford College, London; (*d*) Leamington High School for Girls.
		Junior Forms Examination of College of Preceptors begins.
		Final Examination of Institute of Chartered Accountants begins.
Wednesday,	27th.—	Examinations for Major Scholarships of Herts County Council begin.
Saturday,	30th.—	London Geological Field Class: Excursion to Croydon.

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Plato's Republic
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Renan, Ernest, Essays of
Renan's Antichrist
Reynolds's, Sir Joshua, Discourses
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Sainte-Beuve, Essays of
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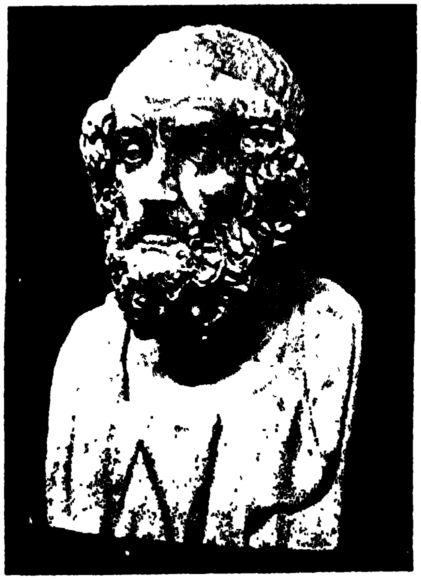
Photo.] [*W. H. D. Rouse.*

Walls of the Ac[illegible]s, built of debris after the Persian inva

Photographs of sculptures in the round and in relief and of the other visible remains of antiquity are so numerous that I can but touch on their chief kinds. Almost every construing or history lesson may be illustrated from these. There are the portraits, from Homer to Constantine the Great; what matter if some are imaginary? Provided there is no deception, and the probabilities are not violated, an imaginary portrait is better than none. And great profit may be sucked from the genuine ones. A boy is often impressed by the dignity of Sophocles, the careless power of Pericles, the grim determination of Cæsar; even if he is not, he at least learns to distinguish them from one another. Then there are illustrations of poetry or mythology: figures of gods, or scenes such as the battle of gods and giants, Perseus and Andromeda, the theatre, a scene in the green-room, masks, the chorus, the actors, and so forth. In history, besides portraits and places, we may bring in such an illustration as the Lion of Chæronea, the Victory of Samothrace or Olympia. For ancient life, the Greek vase-paintings are most valuable; amongst them may be found scenes of war and of peace, sacrifices and religious ceremonies, the craftsman in his workshop and the boy at school, feasts, processions, and public games, the mourner by the tomb, and the soul in Hades; in fact, there is hardly any side of ancient life which does not find illustration in these. Even literary scenes are not wanting. Many vases depict scenes from Homeric legends, or those which we find in the dramatists; and some show scenes from stage-plays, such as the well-known chorus of birds prefixed to Mr. Merry's edition. We sadly need an enterprising publisher to make the vase-paintings available. As wall pictures, they might be produced for a couple of shillings each, if there were a large circulation.

It is quite easy to get most of these illustrations in the form of lantern slides, and one hour in the term might well be given to a lecture, instead of a lesson, with the lantern's help. A period of history or a few books of Homer might thus be summed up in brief, as the pictures come before the boys' eyes. A useful list of illustrative slides is given in Field's "Catalogue of Lantern Slides for Fyffe's History of Greece" (6d), and a Roman catalogue is preparing. The Hellenic Society has a large loan collection of slides, and sells copies of them to members; the same is true of the Teachers' Guild.



Homer.

(*Naples Museum.*)

From "An Atlas of Greek and Roman Portraits" (Messrs. J. M. Dent & Co.)

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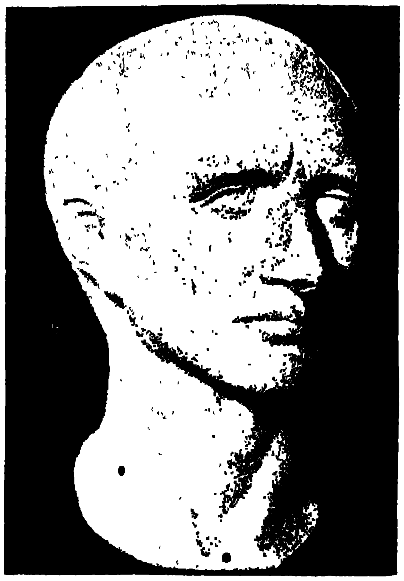
[1] Other firms are: for Greece, Rhomaides Frères, and Constantine Athanasiou, Rue d'Hermes, Athens, for the eastern Lévant, Bonfils & Co., Beyrout, Syria, or Smyrna; for Italy, Sommer e Figlio, Largo Vittoria, Napoli. The German School at Athens has a large collection, mostly of places and things not obtainable elsewhere; but very dear, often bad, and most of them adorned with a Mann or Frau striking an attitude in the foreground.

Even more useful in many ways are models: but there are few to be had. At the Museum of the Teachers' Guild some may be seen. The Greek temple and the Greek theatre, a house from Pompeii, and some ancient armour, are to be found there; but where is the loom or the plough, where waggon and siege-engine, where the ancient fortress? We sadly want these, and there is no doubt that by combination we could get them. If a good number of schools or schoolmasters would undertake to buy specimens of such models, it is certain that some firm would undertake to provide them. Electrotypes of coins are also most useful, not only for their historic interest, but often for their artistic beauty. Plaster casts of famous statues are a great ornament to a class-room.[1]

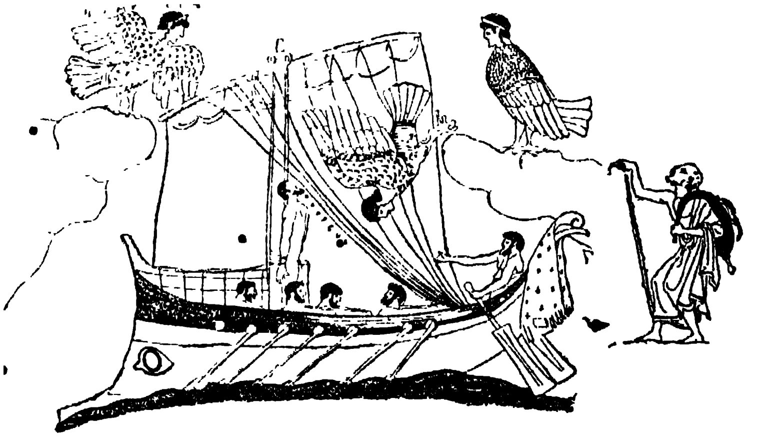


Julius Caesar
(*British Museum.*)
From "An Atlas of Greek and Roman Portraits" (Messrs J. M. Dent & Co.)

Most interesting of all are genuine antiques, and schoolmasters will find it well worth while to get a few. It is not difficult to get a small Greek vase, and many coins can be bought quite cheap. Greek or Roman sling-bullets, or arrow-heads, can sometimes be had. Boys have a quite superstitious reverence for an original, and are interested even in a potsherd from Mycenæ with nothing on it. As I am addressing my fellow-augurs, I will not scruple to make a confession. When I have coins and electrotypes to show, I pass round the genuine coins first. Someone is sure to ask whether they are real, and I can answer yes with a clear conscience; the electrotypes then usually pass without comment.

But it will be urged, these things cost a mint of money. They do indeed; and it must be admitted they are out of the reach of the average schoolmaster. But the schoolmaster ought never to be expected to buy them. Each well-conducted school has its library of books; and no less certainly it should have its library of pictures and museum of models and lantern-slides. These should not be boxed up under glass, but available for each master to take into his class-room. We are usually told that schools cannot afford them. As far as the public schools are concerned, that is sheer nonsense. Fifty pounds a year would soon produce a very good collection of pictures and models. The schools will spend thousands of pounds on laboratories, and on open scholarships by which they hope to "attract clever boys," and to say they cannot afford £50 a year is absurd. Let them suppress one open scholarship, and leave one clever boy unattracted, so as to benefit the whole school in perpetuity.

Suppose that by hook or by crook we have our pictures: how are we to use them? Certain of these which are likely to be often needed will hang permanently on the class-room walls; besides the maps of Italy and Greece, there will be one or two of the large wall-pictures which illustrate the theatre, the Roman house, Roman or Greek soldiers and armour, the ancient ship, and so forth,[1] according to the author or subject just then in hand. Photographs and smaller pictures are most conveniently exhibited in frames with movable backs, which can be easily made by any picture-framer. These will be chosen to illustrate the day's work. Thus a lesson on the "Medea" might be illustrated by a portrait of Euripides, plan of Greek theatre, views of the theatres at Athens and Epidaurus, pictures of actors, scene in the green-room, the picture of Medea from Pompeii. A chapter of the Gallic wars would require Cy-



Ulysses and the Sirens (from a Greek vase).

(*From Anderson's "Pictorial Atlas to Homer"* (*Messrs. Grevel & Co.*)

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[1] Mr. Ready, of the British Museum, supplies electrotypes of coins at 2s. 6d. each; Brucciani, Covent Garden, has a fair collection of casts.

[1] Two series are published, with pictures of varying merit. Cybulski, "Tabulæ quibus antiquitates Græcæ et Latinæ illustrantur" (Kohler, Leipzig), 4s. or 5s. each; Launitz, "Wandtafeln zur Veranschaulichung antiker Lebens und Kunst."

bulski's plate of Roman siege-engines, plan of the Roman camp, Roman soldiers and armour, perhaps a plate or two from Trajan's Column, and a portrait of Cæsar. A denarius, with Cæsar's head on it, might also be brought in. Homer is capable of much illustration, as may be seen at a glance from Anderson's "Atlas to Homer' (21s.), but unluckily the pictures have not yet been reproduced so as to be useful in the class-room. For the Sicilian Expedition we could produce portraits of Thucydides and Alcibiades, a coin or electrotype of Syracuse, raised map of city and harbour, Cybulski's Greek soldiers and armour, Greek soldiers arming and fighting from the vases, a leaden sling-bolt and an arrow-head, perhaps a lance-head and real Greek helmet from the school museum.

Photo.] [English Photographic Co.

Funeral monument of Dexileos.

These illustrations teach many new facts, but their real merit is something else: the help to the memory, and the interest caused by them. A picture or model serves endless descriptions, and is far easier to understand and recall; and the sleepiest dunce is aroused to curiosity by the sight of such things. An afternoon's lesson on a hot summer's day often goes off quite pleasantly by these means. When the boy's attention wanders, and his eyes with it, they rest not on ink-splashed walls, but on bright pictures, which he absorbs unconsciously and remembers. Boys may be taught how to learn also, if for example a new picture is put up which they do not understand. Say it is the monument of Dexileos, with a Greek inscription under it, and someone wants to know what it means. You suggest that anyone who likes may try to decipher it, and if anyone succeeds you may offer him, as a prize, a small picture of the same, which you can get from the English Photographic Company for threepence. Several boys will try, and I have often had astonishingly good results from that very picture. The boys get quite a new idea about Greek writing, which they usually imagine to have been just what it is in our text-books, stops and all. The successful boy puts his picture up in his study, and takes it home, and there's no saying where the missionary work of that picture will stop. Or again, the pictures may be made directly useful for our special purpose of teaching the ancient languages, if we talk about them or ask simple questions in Latin or Greek, to be answered in the same language. In fact, there is no end to the usefulness and interest of pictures and models as aids to classical study.

SOME USEFUL PUBLICATIONS.

Two magnificent series of plates are issued by Bruckmann, of Munich: "Denkmaler der Griechischer und Römischen Skulptur," and "Griechische und Romische Portrats," each series meant to comprise about 100 parts at £1 the part. Bruckmann also issues a large series of photographs of sculpture under the title of "Einzelverkauf," sold separately (mostly 6d each); in this he includes only what no one else has photographed, and he hopes in time to photograph everything. Most of the large museums sell photographs, though none have complete sets. The British Museum has published a portfolio of "Ancient Sculpture." Grevel and Co.'s "Classical Sculpture Gallery" issues a part each week (12s. a year); it contains the usual German muddle of all periods, countries, and styles, but those who live long may see all the chief sculptures reproduced here. It is worth getting. Roman warfare under the Empire is illustrated by Cichorius's "Reliefs der Trojanässule." Vase-paintings: Hartwig, "Grechische Meisterschalen"; Lenormant and De Witte, "Elite des Monuments Ceramographiques"; Gerhard, "Auserlesese Vasenbilder." All these can be got unbound, and so used for class work.

The teacher will find the following books useful: Baumeister, "Denkmaler der Classichen Alterthums," 3 vols., in dictionary form (the chief pictures are published separately and cheaply as "Bilder aus der Gr. und Röm. Alterthums fur Schüler," Munich, 1889). Darenberg and Saglio, "Dictionnaire des Antiquités gr. et rom." (in progress), 5 fr. the part; "Wiener Vorlegeblätter" (vase paintings in outline); Murray and Smith, "White Athenian Lecythi in the British Museum;" and "Designs from Greek Vases"; Murray, "Specimens of Greek Vases in the British Museum;" Firmin-Didot (Paris) publish M. Reinach's "Bibliothèque des Monuments Figurés" at 25 fr. a volume, a cheap reprint of scarce works. Leroux publishes the same scholar's "Répertoire des Vases Peints" and "Répertoire de la Statuarie," at the absurdly low price of 5 fr. a volume. Portraits: Bernoulli, "Römische Iconographie." There is no similar work on Greek portraits. I ask pardon for mentioning a small "Atlas of Greek and Roman Portraits" (Dent, 2 parts, 1s. 6d. each), as there is nothing else of the sort. Portraits on Coins: Imhoof Blumer, "Porträts auf gr. und röm. Münzen"; Schreiber, "Atlas of Classical Antiquities," 21s. (Macmillan); "Bilder zur Mythologie und Geschichte der Griechen und Röman" (Hoppe-Graeser, Vienna).

EDUCATION AT THE PARIS EXHIBITION.

(From Our Special Correspondent at Paris.)

THE larger portion of the Educational Exhibits are housed in the long left wing of the Palais des Champs de Mars. It is here that the principal countries are to be found—Great Britain, America, Russia, Hungary, Holland, and especially France, which alone occupies more space than all the other nations put together. The French colonies and Algeria exhibit, however, at the Trocadero. Their example is copied by Canada, which has included its educational section in the general exhibition. Italy, again, has placed its school-work in the graceful palace it has erected on the banks of the Seine. Bosnia and Herzegovina, Bulgaria, Greece, Mexico, Peru, Roumania and Servia have likewise utilised their "palaces" for the same purpose. Austria alone is represented by a school-garden at Vincennes, and Germany has sent nothing at all. The absence of the most educational country in the world is variously explained. It is supposed by some that Germany, having arrived at a high state of pedagogical excellence, is unwilling to participate in an exhibition where she has nothing to learn and much to loose by unveiling the secrets of her success. Others affirm that, determined to come out at the top in all the sections in which she is competing, Germany has decided to make all her efforts for the industrial and mechanical sections, in which she has certainly succeeded.

The French section is very thorough indeed. All the 86 departments are represented, as well as the territory of Belfort. There is a model class-room of a primary school-room, which will give English visitors a very truthful notion of the ordinary type of a French school. On the walls are hung the Declaration of the Rights of Man, the "*loi graumont*" on cruelty to animals, which the recent discussions on the bull-fights has made very "*actuel*" at present. There is a map of the department and of the commune, the pictures of French scenery that bear a strong resemblance to the railway advertisements, and are distributed by the Ministry to the schools. Blackboards abound, and against one side of the room is a school museum and library, while above the teacher's head hangs a chart relating to agricultural experiments. In front of the teacher's desk are several rows of seats of different sizes for the children, who come to school at six years of age and leave at 13. It is difficult to give anything like an adequate idea of the primary section, or, indeed, of any section of French education. The authorities have certainly spared no pains in order to render it as complete as possible. First the teachers were invited by the inspectors to send in certain exhibits on trial. These were subjected to a careful selection, and the best sorted out. A further weeding out was subsequently made by the *inspecteur d'Académie* who is at the head of each department, and the second selection despatched to Paris. But even then the primary exhibits proved far too numerous. They filled no less than 880 packing cases. A third and final choice had to be made, which is represented to-day at the Exhibition.

The Infant-school section is probably less developed in France than in England in the State schools owing to the competition of the religious establishments. The section, therefore, given to the *école* naturally is comparatively small compared with the immense space occupied by the rest of primary education. It is interesting to note that of the five-and-a-half millions in the elementary schools nearly four millions are in the State schools as against a million and a half receiving a sectarian education, and of the latter number by far the greater portion are girls. Still the work of the Roman Catholic schools is a very great one, as a glance at the exhibition of the *Frères des écoles chrétiennes et l'Union des frères enseignants* will show. The two bodies, if somewhat unduly depreciated in France by the Government, are strongly backed by them in their foreign work, which is especially organised and developed in the East. A cursory glance at the work of the *Frères des écoles chrétiennes* reveals their strength in writing and geography. Further on we come to the *Associations laïques*, the *Philotechnique* at Paris, with 847 *cours* and 12,897 pupils, and the *Polytechnique*, which has gone up by leaps and bounds, and held last year no less than 700 *cours* in Paris. These institutions are practically evening schools, and fulfil the double purpose of enabling pupils to continue their studies or of applying themselves to professional subjects. Beyond these comes a fine display by the great school publishers, Relageau, Amand Colus, De Larousse and others. We notice several maps that are very clear, but too small to be seen from the back bench of a large class. We come next to exhibits of the Blanc Sprache, a sort of new Volapük. When will people learn that there can be no universal language till the associations of ideas form themselves in exactly the same fashion in the minds of individuals of different nations and races? This may happen in the linguist, but until then it would be wise to give linguistic inventors a wide berth.

The Agricultural Education section is divided into two parts. One deals with the agricultural education given in the primary and higher primary schools. Especially interesting to those who demand the introduction of the notions of agricultural science into our schools are the numerous experiments made with various manures either in the *champs d'expérience* of the schools or in a more modest form in flower-pots. Attached to this section is a small garden outside the building, in which M. Réné Leblanc, the great advocate of agricultural education in schools, has established a complete series of experiments. The second section of agricultural education deals with the professional schools, from the *école pratique* up to the *Institut agronomique* at Paris, which turns out not mere farming experts but agricultural chemists.

The retrospective exhibition of French education is full of interesting reminiscences. There are portraits of those who have left a name in the annals of French education, and many curious contemporary engravings which illustrate the village dominic in all his glory some 180 years ago, which inevitably recall the verses of Goldsmith. The section devoted to the *écoles normales* is an admirable object lesson of the immense amount of money and thought that the French have expended in order to render the training of these primary teachers as thorough as possible.

The French Secondary Education exhibition is less attractive than the Primary. It contains, however, some fine examples of artistic work. The *Frères des écoles chrétiennes* are also exhibitors as well as the crack religious College Stanislaus, which has a knack of carrying off a large number of prizes at the *concours général.* A huge plan of an ideal college displayed by one of the publishers has a pathetic interest for Englishmen, as it bears the name of the late Père Melon, who came to England scarcely a year ago in order to study the English school system with a view to copying the best of its methods. The University section contains a very fine collection of photographs of the different universities, with specimens of their work, the whole giving a very strong idea of the enormous intellectual activity of the country.

The purely technical French work has been arranged in a separate building. Those people in England who feel inclined to rest content with what we have accomplished in the way of technical education would do well to visit this section. The School of Arts et Métiers, at Chalons, contains machines put together by pupils such as no technical institute in England can show, and many of the other technical schools display very noteworthy work. Limoges, among others, has a charming exhibit of pottery, which all lovers of ceramics should make a point of seeing. Of the other countries, America has certainly the most complete exhibition. Unfortunately, its very completeness makes all attempt at analysis impossible. Despite the comparatively narrow space it occupies in comparison with France, its representatives have managed to give a general conspectus of their educational system and methods. They contrive to put a whole school into a cupboard by means of a very ingenious device. Photos of the school and its work are arranged on wooden screens which are fastened together in a book form, and can be locked up like an ordinary cabinet. Underneath the cabinet are kept specimens of the pupils' work. The exhibits are grouped generally under cities, and give a most admirable object-lesson of the way in which America has organised her educational ladder from the gutter to the university. The whole exhibition should prove a regular eye-opener to all who visit it from England.

We have already spoken of the excellence of French technical education. But the Americans have gone one better with their magnificent technical colleges, which receive pupils at 18 and keep them for four years. When will English people learn that it is only a question of time as to when we shall lose the engineering trades to America, as we have already lost the chemical trade to Germany? In the heyday of a war-boom, when trade in engineering work is fictitiously inflated, it may be difficult to obtain a hearing. We can only hope the inevitable reaction which must come will come as soon as possible, in order to set people thinking on the supreme need of really higher technical training.

Another country which has expended a great deal on its exhibition is Hungary, and certainly the show is eminently creditable to a nation whose independence is barely thirty years old. The Government have made prodigious efforts to capture the scholastic population by building veritable school palaces, which could vie with those of the London School Board, in towns of five and ten thousand inhabitants. Unfortunately they have not done so much for the teachers, who number about one to every ninety children. On the other hand, the teachers are in some ways the most favoured of their kind in Europe. When they retire, their pension is exactly the same as their pay when on the active list. The educational activity of Hungary is thoroughly conceivable when it is understood that, out of a population of nineteen millions, only about ten millions are Hungarian; the rest are divided up among five or six other races. In addition there are no less than seven or eight different religious creeds in the country.

The English Exhibition does not come out badly, considering the parsimonious way in which it has been treated compared with the other countries. Still the weakness of our want of system is very evident. Apart from the work of some of the great Board schools and big public schools, there is a want of unity about it which must make the English educational system a sore puzzle to the foreign experts. Unfortunately the best part of English education, its educational spirit and its freedom and variety, are just the things that absolutely refuse to lend themselves to exhibition at all. And hence in many respects the English section compares disadvantageously with those of its neighbours. The same is true of the Welsh Exhibition. Scotland, on the other hand, though naturally a small exhibition, is more compact and intelligible. The Dominion of Canada is very well represented; and its exhibition does infinite honour to our premier colony. Canadian education, which in many ways resembles the American, has adopted the same method of putting a whole school into a cupboard. Its school administration, however, is not exactly the same. The Protestant schools in a city are under a Protestant Board, and the Catholics under a Catholic, and the individual ratepayers elect to support the school they prefer. The system apparently works out very well.

Space precludes notice of the exhibitions of the other countries, among whom, *honoris causa*, one may well cite Japan, which has progressed with giant strides during the last thirty years. A good word is also due to Bulgaria. The Bulgarian independence was due to the Bulgarian schoolmaster, who kept alive among the people the sense of national independence. The Government have not proved ungrateful, as is shown by the statistics of the numerous elementary schools with which it has covered the country.

It is to be hoped that all interested in English education, who are not too proud to learn from others, will come over here and see with their own eyes what other nations are doing in education. An hour or two spent in the French primary section, in the French Technical Exhibition, or in the American department, will probably bring home to them, in a way they never realised before, the immense amount of pains and money our neighbours have expended in order to build up their present flourishing establishments, and disgust them for ever with our half-hearted, haphazard, piece-meal methods of tinkering with the question of national education.

CLAY-MODELLING IN SCHOOLS.

By T. L. Humberstone, A.R.C.S., B.Sc.
County School, Dolgelley.

THE immediate purpose of this article is to describe my experience in the arrangement and carrying out of a course of instruction in clay-modelling, rather than to discuss at length the more abstract question of its merits as a form of manual and artistic training. It will be sufficient to mention a few of its claims to acceptance as a school subject. It trains the sense of touch and of proportion in three dimensions, introduces a new and beautiful medium for the expression of æsthetic perception, and develops in a marked manner manual dexterity.

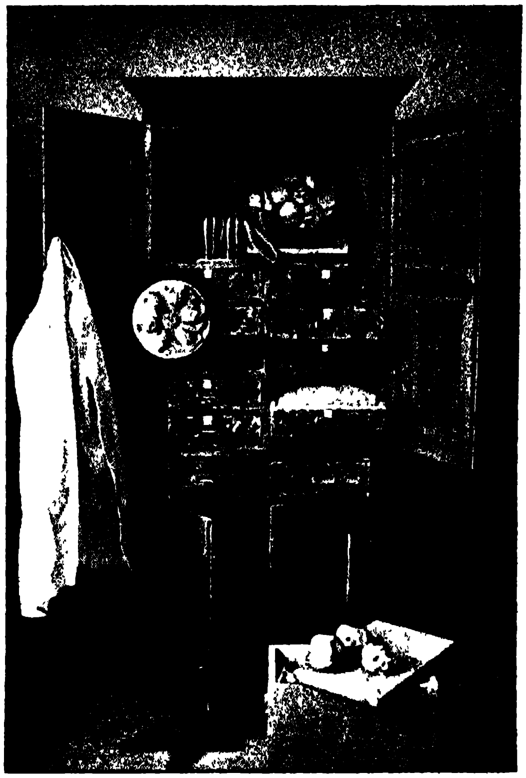
Method of Instruction.

The form of instruction here advised and described is adapted for children of the age of twelve upwards. Those whose fortune it is to teach quite young children are recommended to consult the excellent "Manual of Clay Modelling," by Miss Unwin, published by Messrs. Longmans and Co., in which the method of modelling from common objects is described. For children of the age of twelve and upwards the method of modelling from the cast is most satisfactory.

The casts most suitable are those large and bold in treatment, such as the rosettes from the Capitol, foliage from Notre Dame, plums, pears, &c. A useful list of suitable casts will be found in the South Kensington syllabus of Elementary Modelling from the Cast. Portions of the human figure, such as eyes, noses, are interesting to model, and have the advantage that bad modelling is more apparent than in the copying of ornament. An expenditure of £5 to £10 would be sufficient to supply a convenient stock of casts for a class of ten to twenty boys.

Higher Work.

Boys who have become adepts in modelling these more simple examples may be allowed to attempt masks and heads, though this work will be found much more difficult. There is no apparent reason why models in alto-relief of the human figure should not be attempted by older boys. As an alternative or further form of higher work, designs in the flat may be interpreted and modelled in relief. This is excellent training, and may lead to original designs and their execution in clay. A design for decorating some part of the school and possibly introducing the school insignia might appropriately be attempted.



The Dresser and Modelling Tools.
(Photo by C. H. Young, Dolgelley, Towyn, and Aberdovey.)

The modelling room, like all art rooms, should be lighted from the north, and preferably by high lights. A special room, though not absolutely necessary, is certainly desirable, and forms an interesting feature in a school. The casts are hung round the room at convenient heights. We have found the picture-rail and movable hook an excellent method.

The Apparatus.

The modelling board is best made of mahogany; a convenient size is 18in. by 16in. By affixing a piece of wood square to the board, it will be possible to fit each board into a compartment of a dresser; the advantage of this arrangement being that the clay is more easily kept moist, confined as it is in a closed place. The first photograph shows such a dresser with boards in and out of their compartments. Great care should be taken that the boards fit quite loosely into their compartments. They should be of well-seasoned mahogany; but even then they swell very much in contact with the moist clay, and much trouble will arise if a board gets fixed in its compartment.

The first photograph shows also the most useful tools, standing in a piece of clay above the boards. They are made of pearwood, and cost about 3d. each. Each boy should have two or three, but it is most necessary to insist that the fingers are the chief tools. Stress should be laid on the importance of building up the model by superposition of small pieces of clay. The wooden tools should only be used for details, and any attempt to carve the clay should be checked. Comparison of the shadows of cast and model should be used to test the accuracy of the work.

On a stand in front of the dresser, and also in the second photograph between the two children's heads, is the first successful cast made at the school. It is a rosette from the Capitol, and was modelled in clay by a boy after about thirty lessons of one hour. It was afterwards cast in plaster. On the floor is the box used for the clay. It is air-tight, and is painted inside (a zinc lining might have been used, but this is more expensive). The clay is kept in lumps, which should be sprinkled occasionally with water and covered with a wet rag. It should be quite soft, but not wet enough to soil the fingers. The cost is 10s. per cwt.

Most of the ornaments are modelled on a clay ground. This is easily made with the help of a wire or a piece of wood with a straight edge. When the work is finished for the day, it is covered by a damp cloth and put away in its compartment. It will be found in good condition in a week's time.

The second photograph shows the working arrangement. The board is supported on an easel, and model and cast are similarly placed with reference to the light, in order to get similar shadows. The tools are again indicated. They should be kept quite clean during work.

Casting.

It is very desirable that good models in clay should be cast in plaster, not only as a permanent record of the work done, but as a gratifying reward for good work. To describe in detail the process of casting is impossible in a short article, but I may proffer a few hints, and the assurance that both patience and perseverance will be necessary to master the eccentricities of plaster of Paris. The plaster should be fresh, and should be sprinkled on to the water contained in a deep vessel, until it rises to the level of the water or a little above. Then stir (but not for a very long time), and pour over the clay model suitably embanked. If the plaster is of the right consistency (a little thicker than cream), it will set hard in a quarter-of-an-hour or so, and the clay may be removed from the intaglio. The latter should be well cleaned out, covered all over with soap solution, and filled up with plaster of the same thickness as before. When the cast has set, the intaglio must be chipped away with a chisel and mallet. If the intaglio was well soaped, it should separate easily from the cast, but it is almost certain that the cast will be somewhat damaged by the chisel until great dexterity is acquired. Small wounds may, however, be repaired with plaster. It would be well to practise on casts of models in which there is no undercutting. A little help from an expert should be obtained if possible.

The Working Arrangement

(*Photo by C. H. Young, Dolgelly, Towyn and Aberdovey.*

A large selection of casts may be seen at Messrs. Brucciani, 40, Russell Street, Covent Garden. Thomas Laurie, 28, Paternoster Row, has recently published a good series by Messrs. Taylor and McKechnie. The tools may be obtained from Lechertier Barbe, 95, Jermyn Street, W., and the clay from Brucciani or from a pottery. All the woodwork can be done by a capable joiner.

Any teacher of drawing with aptitude and some artistic potentiality may, by practising himself, acquire sufficient knowledge of modelling to enable him to carry out such a course as has been described. Good work can be done without expert knowledge; for this is the less necessary, on account of the interesting nature of the work.

Modelling develops the power of observation, for to imitate we must observe closely, and only by close observation can we learn to appreciate the beautiful which is enshrined in those grand specimens of ancient Greek sculpture which have come down to us, and to which the untrained eye is blind.—(Evangeline Stirling.)

MARKS AND MARKING.

By HAROLD W. ATKINSON, M.A.
Assistant Master in Rossall School.

II.—SUMMATION OF MARKS.

THE second part of the subject will include such cases as the compilation of totals for a mathematical set including Euclid, algebra and arithmetic (or other subjects as well), and the compilation of form totals from the marks in the various subjects learnt in sets.

In these cases the difficulty of deciding on maxima for the subjects must be faced. Whether the maxima represent the relative value of the subjects as educational agents or their supposed relative difficulty, or are based on the number of hours given to the subject, is a question for consideration. On only one of these systems would there be any possibility of agreement as to the maxima to be assigned, namely, that of taking the number of hours as the basis. The two other possible bases would result in about as many schemes of maxima as there are teachers.

As an example of the first case put above, that of compiling a total for a set in mathematics, let us suppose the pupils to be working in two divisions in each subject, but the divisions containing different boys in the different subjects. Here there is a double difficulty to contend with. First, what are to be the relative proportions of marks in the subjects themselves; and, secondly, what is to be the proportion of marks in the first division to those in the second division? Is this proportion to be the same between the two divisions in each subject? To take the second point first, the answer can only be, No, not necessarily; the proportion must depend on the relative advancement of the average pupil in the divisions. With regard to the first point, it would seem that there ought to be taken into account the relative importance of the subject to the pupil at the time. Thus, to a beginner in mathematics the most important subject is, presumably, arithmetic, and this should consequently have the larger share of marks, and indeed of time. In an advanced set, the arithmetic would only take a second place, not only because of less time being devoted to it, but also because the time given to it would be more for the sake of keeping up the subject than for the purpose of learning much fresh work. In such a class the other and newer subjects should have assigned to them a share of marks greater in proportion than the amount of time devoted to them.

Similar considerations should theoretically control the systems of marking in a school generally. Thus, in a low form, English should have a proportionally greater maximum than German, a subject started later and of less importance at the time than English. In a higher form, when the mother tongue has been more thoroughly learnt, greater weight should be allowed to German or French, which, though perhaps no more hours are assigned to them, are becoming a more important factor in the pupil's curriculum.

Such theoretical considerations are often at present outweighed by practical considerations, such as aiming at a uniform system of marking throughout a whole classical or modern side. Equally unreasonable would it seem to be to assign two hundred to the mere beginner in Greek verse, and the same to French, which is a subject that the beginner in Greek verse has usually carried to the stage at which it should be, as mentioned above, receiving a larger relative maximum than at its earlier stages.

Theory, then, would condemn the custom of having a uniform scale of maxima for a large series of forms such as compose a "side." Its practical advantages are more apparent than real. For it is so easy to scale marks to any maximum that it matters not in what circumstances the marks are produced, they can be instantly scaled to any maximum required.

We now proceed to the consideration of methods used for incorporating into form orders the marks for subjects learnt in "sets."

The two chiefly used may be distinguished as the zero and the non-zero systems of bonuses, according as the lowest marks in each set are, or are not, reduced to zero before the bonuses for the position of the set are added. The latter preserves more correctly the relative positions of boys in the same set, while tending to separate unduly those in different sets, while the former preserves the relative position of those in different sets at the expense of the relative position of those in the same set. A concrete case will best explain these points.

			ZERO SYSTEM.		NON-ZERO SYSTEM.	
	Marks.	Marks.	Scaled 60—0.	Bonus added.	Scaled top—60.	Bonus added.
SET A.	250	180	60	110	60	110
	180	110	37	87	43	93
	70	0	0	50	17	67
				No bonus		No bonus.
SET B.	250	180	60	60	60	60
	180	110	37	37	43	43
	70	0	0	0	17	17
II.						
SET A.	250	110	60	110	60	110
	180	30	18	68	43	93
	150		0	50	36	86
				No bonus.		No bonus.
SET B.	250	110	60	60	60	60
	180	30	18	18	43	43
	150		0	0	36	36

A comparison of the results of the two methods will show certain marked differences between the systems.

Let us consider two sets, A and B, out of which we suppose ourselves to have chosen the marks of the top, middle and bottom boys. The marks are, for the sake of simplicity, imagined to be the same in the two sets. In Table II. the marks of the bottom boy are taken higher than in Table I. In

Table I. it will be seen that while the marks of the bottom boy of set A on the zero system are below those of the top boy of set B, the reverse is the case on the non-zero system. This is also the case, of course, in Table II. (110 and 60 have been taken as the maxima for the two sets respectively, as showing the principle of overlapping adopted in the zero system, and for purposes of easy comparison the same maxima have been used in both systems, though in the non-zero system the maxima of 100 and 50 would suffice.)

Now it will be seen that on the zero system it is a disadvantage, so far as marks for his form order are concerned, for the bottom boy of a set to be where he is, since he would score more as top boy of the lower set. On the non-zero system, on the other hand, the bottom boy of set A must almost always score more than the top boy of set B. Further, the differences between two boys in the same set are exaggerated by the zero system.

Let us now turn to Table II. In this case the marks of the lowest boys are supposed higher than in Table I. On the zero system this has the effect of seriously affecting not himself, but all the members of the set between the top and bottom, while on the non-zero system this is not the case. On the zero system, in a set with a smart bottom boy, all suffer for his smartness. Thus, in set B, the middle boy's marks are just halved by the rise here assumed in the marks of the bottom boy. For these reasons the zero system seems the less perfect.

Yet another point. On the zero system, the bottom boy knows that whatever work he does he cannot get more than his 50 or his 0 towards his form order, and this may tend to discourage him. On the non-zero system, he knows that, in addition to his 50 or his 0, he can always put on a certain proportion more. Compare, for instance, the 67 against 50 or the 86 against 50 in the final marks of the bottom boy in set A in each table.

The objection to the non-zero system is that it may lead to the differences between the bottom boy of set A and the top boy of set B becoming too large. Thus, perhaps the difference between 86 and 60 in Table II. is too large. On the other hand, the zero system produces a difference that is always a negative quantity. It is, indeed, very questionable whether it is right to make the marks of the two sets overlap, in spite of all that may be said in favour of it.

Considering, then, the *pros* and *cons* of the two methods, the best that can be said for them is that they are systems that are mechanically easy to calculate and work with. No one could be found, probably, who would assert that either is satisfactory or scientific. The great differences in their results point to the fact that one or the other, or even both, are seriously defective. It yet remains to evolve some system that is satisfactory from all points of view.

The marks so scaled for the whole of the sets are re-scaled to suit the individual forms, so that the highest marks for the set subject bear some certain ratio to the rest of the work of the form.

EXPERIMENTAL CHEMISTRY.

A Course of Work based on the Junior Local Examinations of Oxford and Cambridge Universities.

By Prof. J. B. Coleman, A.R.C.S., F.I.C.
South-Western Polytechnic, Chelsea.

VI.—Sulphur—Hydrogen Sulphide and Sulphides—Sulphur Dioxide—Sulphurous Acid and Sulphites—Sulphur Trioxide—Sulphuric Acid and Sulphates—Varieties of Phosphorus.

The subject is treated in such a manner as to give the *teacher* working details of the experiments suitable for the course. The experiments, unless otherwise stated, are to be performed by the student. If the experiment is starred (*), it should either be performed by the teacher in the lecture room, or done by the student under the *personal* supervision of the teacher.

(48) Sulphur.

The chief source of sulphur is "native sulphur," which is found in most volcanic districts. Sulphur also occurs in the combined state as metallic sulphides, notably as a sulphide of iron called iron pyrites.

Expt. 97.—Heat a little powdered iron pyrites in an ignition tube, and notice the sublimate of yellow sulphur.

Modifications of Sulphur.—Sulphur occurs in several *allotropic* forms with very different properties; three of these modifications are described below.

Expt. 98.—Place a few pieces of sulphur in a test-tube and heat very gradually; carefully note the colour and appearance as the heating proceeds.

The sulphur will first melt to a pale, limpid liquid; if it is now poured out into water, it will form the ordinary yellow, brittle variety. As the heating continues, the sulphur will darken and become less limpid, until it is so thick that the tube may be inverted without the sulphur flowing out. Eventually it will become limpid once more and almost black in colour. If a little of the melted sulphur is now poured out into water, it will be found to be soft and elastic, *i.e.*, plastic. This plastic variety will return to the brittle form on standing for some hours.

**Expt.* 99.—Half fill a small porcelain dish with "roll" sulphur, and *carefully* heat until the sulphur is melted. Allow the liquid to cool until a thin crust forms. Next make two holes with a stout wire at opposite sides of the dish, and pour out the still liquid sulphur from below the crust. When the dish is cool, break open the crust, notice that transparent, needle-like crystals of sulphur have formed. Put aside the dish for a day or two, and notice the change in appearance.

**Expt.* 100.—Shake up a little sulphur with three times its volume of carbon disulphide, taking care to keep the inflammable liquid away from a flame. Filter the liquid through a dry filter into a dry beaker; cover the beaker with a piece of paper and allow the solvent slowly to evaporate in the open air or in a draught chamber. Note the appearance and form of the crystals.

(49) HYDROGEN SULPHIDE AND SULPHIDES.

This gas is readily made by the action of hydrochloric acid upon ferrous sulphide: since it is soluble in water, it should be collected by downward displacement, and since it possesses a fœtid odour and is *very poisonous*, it should be prepared in a draught chamber.

Fit up the apparatus as shown in Fig. 32. Cover the bottom of the bottle with pieces of ferrous sulphide, and add hydrochloric acid diluted with twice its volume of water. Collect three jars of the gas by downward displacement.

Expt. 101. Burn a jar of the gas, notice the blue flame and the deposition of sulphur; also notice that sulphur dioxide gas (50) is formed, which has a pungent smell, and turns potassium dichromate solution a green colour.

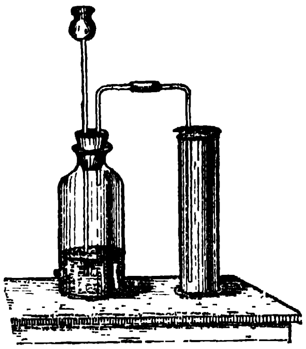


FIG. 32.—Hydrogen sulphide from ferrous sulph

Expt. 102.—Bring in contact with a jar of this gas a jar of chlorine gas (31), notice that sulphur is deposited and that fumes of hydrochloric acid gas are formed when the jars are exposed to the air.

Expt. 103.—Place a strip of filter-paper steeped in lead acetate solution in a jar of the gas. The paper is immediately blackened (see expt. 105).

Expt. 104.—Pass the gas through water, the water will acquire the smell of the gas and give a slight acid reaction to blue litmus paper.

Expt. 105.—Pass the gas into solutions of lead acetate, antimony chloride and mercuric chloride respectively, sulphides of the respective metals will be precipitated.

(50) SULPHUR DIOXIDE GAS.

This gas is produced when sulphur is burnt in air or oxygen (Article II., 14). It is readily prepared by the reduction of sulphuric acid.

Expt. 106.—Fit up the apparatus shown in Fig 33. Cover the bottom of the flask with copper turnings, add strong sulphuric acid, and gently heat the mixture. Collect three jars by downward displacement.

Expt. 107.—Notice the pungent smell of the gas, also its acid action on wetted blue litmus paper. Pour in a little potassium dichromate solution, and notice its colour is changed to green.

Expt. 108.—Place a coloured flower in a jar of this gas, and notice the bleaching effect. The colour may be partially restored by immersing the flower in dilute sodium hydroxide solution.

Expt. 109.—Place a jar of the gas mouth downwards in water, notice the gas dissolves, probably leaving a space above due to air being present.

(51) SULPHUROUS ACID AND SULPHITES.

Expt. 110.—Pass the gas into water for a short time, the water will acquire an acid reaction, the liquid may be considered to be a dilute solution of sulphurous acid.

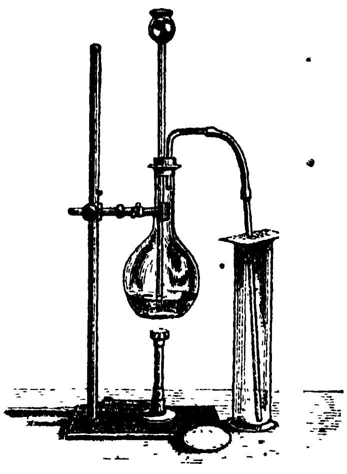


FIG. 33. Preparation of sulphur dioxide. (*From Tilden's "Chemistry."—Messrs. J. and A. Churchill.*)

Add dilute hydrochloric acid and barium chloride solution to (1) the freshly prepared sulphurous acid, and also to (2) some solution which has been made some days. Probably no precipitate will be given with the new solution, whereas the old solution will give a white precipitate, showing that the sulphurous acid has been oxidised by the air to sulphuric acid (53).

Expt. 111.—Neutralise some sulphurous acid solution with sodium hydrate solution, and evaporate down considerably, crystals of sodium sulphite will form on cooling.

Dry the crystals between blotting-paper and heat them with dilute hydrochloric acid; sulphur dioxide gas will be given off. This reaction is characteristic of all sulphites.

(52) SULPHUR TRIOXIDE.

Sulphur trioxide is formed in small quantity when sulphur is burnt in air, but the main product is sulphur dioxide. The latter gas may be made to unite with free oxygen to form sulphur trioxide if exposed to the action of certain substances at a high temperature. Finely divided platinum is the most convenient substance for this purpose.

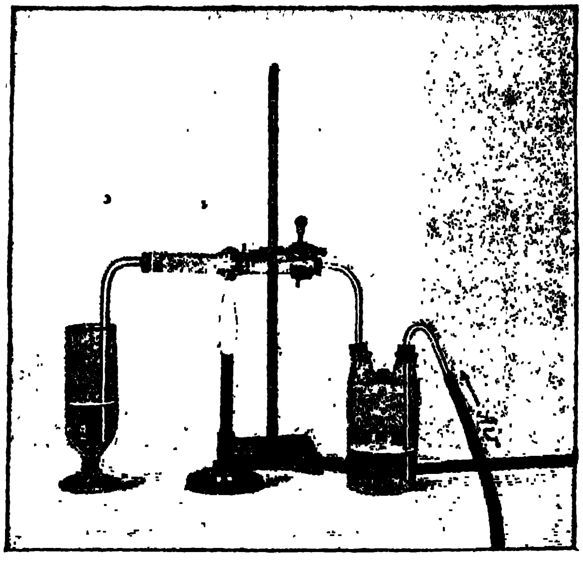


FIG. 34.—Preparation of sulphur trioxide.

**Expt.* 112.—Place a little sulphurous acid in a Woulffe's bottle and connect it with a bulb tube, supported on a retort-stand as shown in Fig. 34.

Place a little platinised[1] asbestos in the bulb of the tube, and heat it to dull redness with a bunsen flame.

Pass a gentle current of air through the bottle containing the sulphurous acid, and notice the heavy white cloud of sulphur trioxide formed.

Pass the white vapour into a vessel containing water. The water will acquire an acid reaction and will give a white precipitate with hydrochloric acid and barium chloride solution.

(53) SULPHURIC ACID AND SULPHATES.

Sulphuric acid is made on a large scale by the oxidation of sulphur dioxide in the presence of water. Under the action of free oxygen this action is slow, but it may be hastened considerably by using the higher oxides of nitrogen.

This process may be imitated on a small scale as follows:—

Expt. 113.—Prepare a solution of sulphurous acid by passing the gas into some recently boiled distilled water. The solution should give no precipitate with dilute hydrochloric acid and barium chloride solution.

Now add to some freshly made sulphur dioxide solution a few c.c. of strong nitric acid and boil the liquid for several minutes. Again test the liquid with hydrochloric acid and barium chloride solution. A heavy white precipitate will form, showing that the sulphurous acid solution has been oxidised to sulphuric acid.

The properties of sulphuric acid may be shown by the three following experiments. The *strong* acid is *very corrosive* and rapidly destroys the clothes and causes painful burns.

Expt. 114.—Place a drop of the *dilute* acid upon a piece of filter paper and gently heat the paper. As the acid becomes concentrated by the evaporation of the water, the paper will be charred.

**Expt.* 115.—Pour a thin stream of the strong acid into a small beaker of water. Notice that the water becomes hot owing to the chemical combination of the acid with the water.

**Expt.* 116.—Fill a small beaker with the strong acid, weigh the whole, and mark the level of the acid with a piece of gummed paper. Allow the beaker to remain exposed to the air for a few days.

Note the increase of volume and of weight due to the absorption of water from the atmosphere.

It is thus seen that the strong acid is a powerful *desiccating* agent.

Expt. 117.—Add iron filings to a little dilute sulphuric acid until no more will dissolve, filter the solution and evaporate down considerably. On cooling green crystals of sulphate of iron will form.

Expt. 118.—To a little dilute sulphuric acid add lead acetate solution, insoluble lead sulphate will be precipitated.

Test for Sulphates.—All soluble sulphates after acidification with hydrochloric acid give a white precipitate of barium sulphate on addition of barium chloride solution.

(54) PROPERTIES OF PHOSPHORUS.

Phosphorus is prepared from bone-ash and mineral phosphates. The preparation is difficult, and therefore not suitable for a laboratory experiment.

Phosphorus, like sulphur, occurs in several *allotropic* modifications. Two kinds are described below. The ordinary, or waxy variety, very readily catches fire. It is therefore kept under water, and should be handled with care. A few experiments illustrating the properties of this variety and of the red variety are described below.

**Expt.* 119.—Carefully dry a piece of ordinary phosphorus about the size of a pea. Place the phosphorus upon a tile or plate and touch it with a *warm* glass rod. The phosphorus inflames immediately, showing its low ignition-temperature. Immediately place over the burning phosphorus a bell-jar or glass cylinder. White flecks of phosphorus pentoxide will deposit on the plate and on the inside of the jar.

When combustion is complete, remove a little of the snow-like substance by means of a spatula and place it in a little water coloured with blue litmus.

The phosphorus pentoxide will combine with the water with a hissing noise to form phosphoric acid, which will turn the blue litmus red.

**Expt.* 120.—Place a piece of phosphorus about the size of a split pea in a test tube, and add 1 c.c. of carbon disulphide. The phosphorus will dissolve on shaking.

Carefully pour the liquid on a filter paper supported on a tripod stand, taking care not to get any of the liquid upon the fingers. When the carbon disulphide evaporates, the phosphous is left in such a finely divided state that it immediately oxidises and takes fire.

**Expt.* 121.—Contrast the appearance and properties of the waxy and red varieties. Place a specimen of both varieties in the dark, the waxy variety will be seen to glow, whereas the red variety will be invisible.

Place a *small* quantity of each variety upon a piece of metal (Fig. 35) some distance apart, and place a flame midway between each variety. The waxy phosphorus will soon inflame, the other variety will probably require the flame to be placed immediately underneath before it takes fire. The ordinary variety takes fire at a temperature a little higher than that of the atmosphere, whereas the red variety requires a much higher temperature.

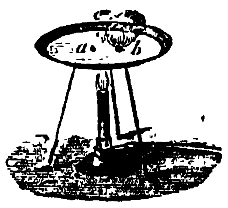


FIG. 35.—Effect of heat on waxy and red phosphorus.

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[1] Platinised asbestos is made by dipping "silky" asbestos into platinum chloride solution and then heating it to redness. This operation is repeated until the asbestos is grey in colour.

SHORT TOURS IN NORMANDY.

By Walter Robins, B.Sc.

In this article some suggestions are given for one or two short tours in Normandy, which may be of use to teachers who intend spending the summer vacation in France. In the space available it is impossible to do more than indicate the route and objects of interest to be visited, and give an estimate of the probable cost. Those who intend making a tour should get the "Guides Joanne," published by Messrs. Hachette, in parts, at 1 fr. The books contain good maps and illustrations, and give historical notes on the towns and buildings mentioned. Mr. Dearmer's "Highways and Byways in Normandy" (published by Messrs. Macmillan), from which the accompanying illustrations are taken, will also be very useful, containing, as it does, references to points of interest in the old churches and details of the castles which will be visited. Whether cycling or not, obtain a "Plan Velo de la Normandie," 1 f. 50 c., at any bookseller's. It is very complete and on a good scale, while the cover is so arranged that any part of the map may be consulted without unfolding the whole sheet.

With regard to cost, it may safely be put down at ten shillings a day at the outside, exclusive of railway fares. In all cases second-class fares are quoted, as no third-class carriages are run on the express trains. Third-class fares may be taken at two-thirds of the second class, but the carriages are extremely uncomfortable and the trains slow. Bicycles are conveyed any distance at a charge of one penny for registration, whilst luggage may always be sent on from your hotel by train to your destination.

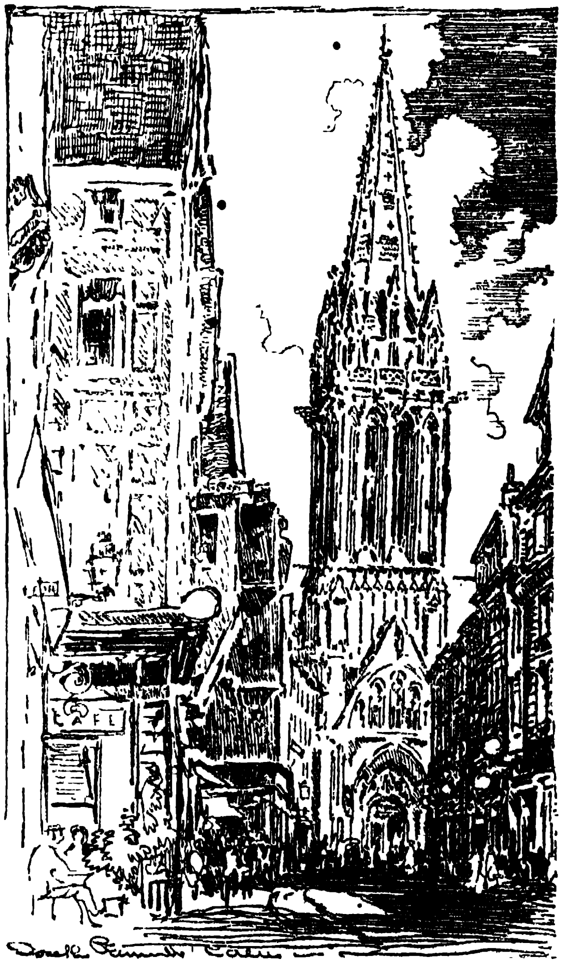
We will suppose that a tourist has been visiting Paris and the Exhibition and wishes to make about a week's tour in Normandy. Our plan is to start at Evreux and finish at Caen. Evreux, on the main line to Cherbourg, forms a convenient starting-point, and a day may be well spent here. There is a good train from the St. Lazare Terminus at 8.45 a.m., arriving at 10.35 (fare 8 f. 15 c.). The great attraction is the cathedral, which is rightly said to be one of the most beautiful in France, and in the Place de la Mairie is the old belfry, built in 1490. Close to the cathedral is the Bishop's Palace, not open to the public, however.

The next town to make for is Lisieux, about two hours by rail (fare 6 f. 30 c.). It is fifty miles by road, so cycling would mean much time. There is a good train at 8.27 p.m., but if it is preferred to spend the night at Evreux, put up at the Hôtel du Grand Cerf. Lisieux, on the line to Cherbourg and a junction for Trouville, has become somewhat of a factory town; still, it is full of interest and situated in beautifully wooded country. Many fine specimens of old, timbered houses are to be found here in the Rue du Paradis, the Rue des Boucheries, and especially in the Rue aux Fèvres. Time is well spent also in visiting the church (formerly cathedral) of St. Pierre, the first Gothic church that was built in France, the church of St. Jacques and the Bishop's Palace. Three miles out of the town is the Château au Mesnil Guillaume. Altogether a full day is required for Lisieux, so the night may be spent at the Hôtel de France.

The next place to visit is Falaise, distant forty-six kilometres, that is nearly twenty-nine miles, by road. The railway journey (fare about 4 f.) is somewhat tedious, involving changes at Mezidon and Couliboeuf. There is a good hotel here, the Hôtel du Grand Cerf. A full day at the very least should be devoted to Falaise, though several might well be spent here. Coming by train in the morning from Lisieux, you get here about eleven. On leaving the station, turn to the right and go up the hill into the market place. On the right is the beautiful church of St. Gervais. After visiting the church the best plan is to keep on straight through the town, past the Hôtel du Grand Cerf on the right-hand side, and then to take a turning to the left which leads down hill by the old wall of the town and along the foot of the steep cliff on which stands the Castle. The road leads past the Tanneries and by the celebrated Fontaine d'Arlette. Continue past the fountain, and take the path to the right leading up to the top of the steep rock which overlooks the Castle. This is certainly the best point from which to see the keep and Tour Talbot, whilst the views of the surrounding country are splendid. Re-enter the town now from the other side, bearing round to the left and you come to the castle itself and into the square, with its fine statue of the Conqueror and church of Ste. Trinité.

The next day should be spent in visiting Thury Harcourt, with its fine château and park. We have here the commencement of the district known as Norman Switzerland. (A good hotel is the Lion d'Or.) The distance by road from Falaise is eighteen miles, but if you are not cycling, it is better to visit the place from Caen (return fare 4 f. 20 c.). From Thury Harcourt to Caen by road is sixteen miles, and from Falaise to Caen fourteen miles, the latter road being painfully straight.

It will be found most convenient to spend the remaining two or three days at Caen, making it your centre for excursions.



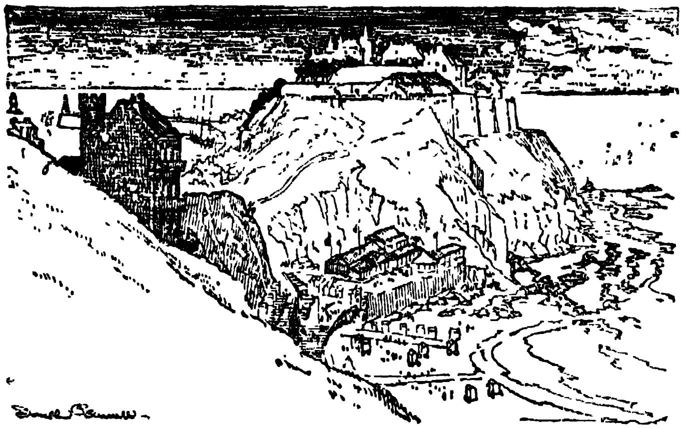
A Street in Caen.

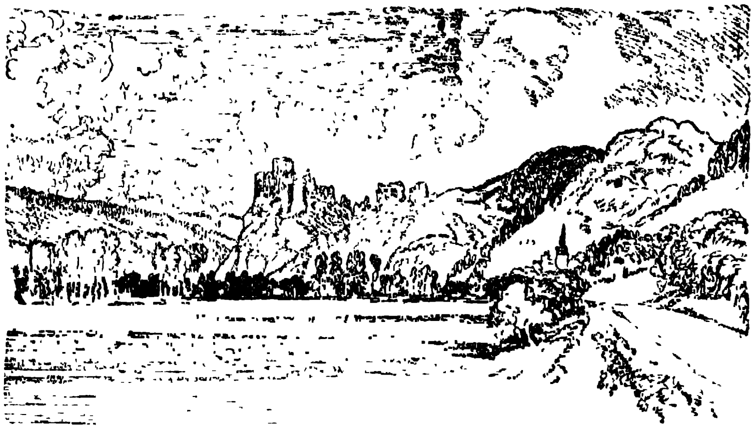
There are several good hotels, but perhaps the Hôtel Ste. Barbe, in the Rue Ecuyère, is the most suitable. The town omnibus (called a tramway) from the station passes the door. A day may be spent in visiting the churches of St. Pierre, St. Etienne and the Abbaye aux Dames. We must refer you to "Joanne" for details. A pleasant afternoon trip is to take the steam tram along the canal to the port of Ouistreham (ten miles, fare 1 f. 50 c.). Another trip to make is to cycle out to Fontaine Henri, a fine Renaissance château, then on to the castle of Creully, and from Creully to Bayeux. From Bayeux to Caen direct the distance is eighteen miles. The railway takes about half-an-hour express (fare 2 f. 30 c.). This concludes the week's tour, the journey home being made by steamer direct to Newhaven.

As most teachers are aware, holiday courses are now held in the summer vacation at Caen and other places. The following tour is recommended to students who have attended such a course and wish for a week's relaxation at the end. Teachers who have spent the time at Caen will, in all probability, have visited Bayeux, Falaise, Trouville and other places within easy reach. A good place to start from is Argentan, which you can reach at eleven, leaving Caen at 9 a.m. (fare 5 f. 15 c.). Here we find the river Orne again, quite a shallow river, very different from what it is at Caen.

There is much of interest at Argentan, and a good deal more time than we can spare might well be spent here. There is Alençon fifteen and a half miles away, and Falaise thirteen miles. Having spent the night at the Hôtel de Normandie, proceed next morning to Ecouché (five miles distant), with its curious old market hall, and thence, if cycling, by way of Ranes to La Ferté Macé, fourteen miles from Ecouché. If you go by train, it will involve changing at Briouze (fare 3 f. 85 c.). Leaving Argentan about nine, you arrive at La Ferté Macé at midday in time for lunch at the Cheval Blanc. A walk or cycle ride through the Forêt d'Andaine to Domfront, a distance of twelve miles, should not be missed. Domfront is set on a hill amidst most lovely woodland. The old ramparts still remain, and we have here the ruins of the castle standing high up and confronting another crag, the Tertre Grisère, just as at Falaise. Spend the night at Domfront and go on next morning to Mortain, fifteen miles distant by road (railway fare 1 f. 90 c.). The chief objects of interest at Mortain are the remains of the castle, the church of St. Evroult and the chapel of St. Michel. This latter is on a hill 1,000 feet above sea level, Mont St. Michel being visible from it on a clear day. There is a good hotel at Mortain, the Hôtel de la Poste.

From Mortain go on to Tinchbrai, sixteen miles by road (railway 2 f. 50 c.). The church is well worth the visit. From Tinchbrai you should make for Vire (ten miles). At Vire is the curious Porte Horloge, part dating from the thirteenth century, the church of Nôtre Dame and the ruins of Henry I.'s castle. To the west of the town, in a wooded valley, lies the hamlet of Les Vaux de Vire (whence the term Vaudeville), and here is shown the house of Olivier Basselin, the poet. The night may be spent at Vire, and Granville be reached next day. The distance by road is just under thirty miles. The railway takes two hours, fare 4 f. 30 c. Unless you leave Vire at 7.40, you do not arrive at Granville till about half-past one, and you will want all the day for the town. Do not omit to visit the church of Nôtre Dame in the old town. Being a well-known watering-place, there are several hotels. We may mention the Hôtel de Paris and the Hôtel des Voyageurs.


Le Roc de Granville.


Château Gaillard.

From Granville we now go to Coutances, sixteen miles by road (railway fare about 3 f. 25 c.), where the day may be spent in visiting its fine cathedral and its churches of St. Pierre and St. Nicholas. You could spend the night at Coutances, or go on to St. Lô (eighteen miles by road, railway fare 2 f. 20 c.) and put up at the Hôtel de l'Univers. St. Lô, on the river Vire, figured in the religious wars of the sixteenth century. Before the church of Nôtre Dame we have the curious Place des Beaux Regards, containing a fine, timbered house, the Maison Dieu. From St. Lô we return to Caen, thirty-five miles by road *via* Balleroy. There are two ways by rail. The quicker way is to go to Lison, where you can get the express to Caen (fare 5 f. 70 c.). It will be seen that the tour takes at least seven days, and the cost, if you do all the travelling by rail, would not exceed £5.

But a fortnight's tour in Normandy with Caen as the starting point may be preferred. In this case, after giving a full day to Caen, take the steamer to Havre and spend the night there. Proceed next morning to Rouen, and on the day after take train to Les Andelys, on the Seine. The journey by road is direct enough, but going by rail you have to change at St. Pierre du Vauvray (fare 4 f.). Here you visit the famous Château-Gaillard, a description of which is given in "Highways and Byways in Normandy." Crossing the Seine, take the road through Louviers to Evreux (twenty-eight miles), where the night may be spent. You could now go on to Lisieux, and from Lisieux to Falaise, and from Falaise to Argentan, and so through Domfront, Mortain, Vire, Granville and Coutances to St. Lô, as described above. From St. Lô go on to Bayeux, spending the night at the Hôtel Luxembourg, and then from Bayeux through Creully and Fontaine Henri to Caen. The full tour will take sixteen days, and would cost you about £10. A variation would be to start from Dieppe and thence go on to Rouen, and so, as given above, to Caen. Circular tickets, on favourable terms, are issued by the Brighton Railway Company, but as a rule they do not extend to the less known towns of Normandy. By sending to Messrs. Cook & Son a list of the towns you wish to visit, you can generally get a price quoted for the whole tour.

TOURS TO PARIS WITH EXTENSIONS.

FOR once the vexed question of where to spend the holidays presents no perplexity. Our neighbours across the Channel have decided it for us. In 1900 there is one goal to which Europe and America hasten—the Paris Exhibition. For, whatever we do before or after, our holiday is incomplete without that. Even under normal conditions Paris is magnetically attractive, but this year, with the glamour of the Exhibition over her, her charms are irresistible. Our friends who have returned declare, "Oh, the pictures, and the statues, and the magnificent buildings, and the . . . but you *must* go!"

Then we must go, but how shall we go? And when we are there, how shall we improve the occasion for seeing something of France in general, or at least of her more attractive parts, such as Normandy and Brittany?[1] Many, doubtless, will be led to regard the matter somewhat in the foregoing fashion; many others will wish to avail themselves of tempting programmes of extension tours to Switzerland and Italy. It needs but a glance at the elaborate arrangements of railway companies and tourist agencies to satisfy the most, or the least, fastidious that their requirements are duly catered for. Times, prices, accommodation—everything is sufficiently elastic to make Paris possible to all but the most impoverished in this last summer of the golden century. With the usual choice of routes, there is such an extensive service of trains and boats that the French capital is brought next door to every part of England and Wales. The London, Brighton and South Coast Company has two express services daily *viâ* Newhaven, Dieppe, and Rouen; the day-express leaving London at 10 a.m., and reaching Paris at 7 p.m., and the night-express leaving London at 9 p.m., and reaching Paris at 7.15 a.m. The faster, though more expensive, route of the South-Eastern and Chatham Railway offers advantages which will always commend themselves to those who like to shorten the sea-journey. The Channel passage may be made either *viâ* Dover and Calais (1 hour to 1¼ hours), or *via* Folkestone and Boulogne (1¼ hr. to 1½ hours). Trains leave Charing Cross for the Dover boats at 9 a.m., 11 a.m., and 9 p.m., and for the Folkestone boats at 10 a.m. and 2.45 p.m. the journey from London to Paris occupying about eight hours.

Tourists should provide themselves with the London, Chatham and Dover Company's excellent official Guide to Paris. It is a gem of a compendium, giving, besides much miscellaneous information, a handy and clear pocket atlas of the streets of Paris, in sections. Another route is per London and South-Western Railway to Southampton, thence to Paris *via* Havre and Rouen. This company issues a remarkably cheap excursion ticket, available for fourteen days. The first-class fare from Waterloo to Paris and back is 39s. 3d.; second class, 30s. 3d.; third class, 26s. These tickets are issued on Fridays and Saturdays only. Considering the distance covered in the entire journey, and the length of time for which tickets are available, this offer strikes us as a particularly liberal one.

Messrs. Gaze and Sons publish what they call a keystone prospectus of arrangements for the Paris Exhibition. The simplicity and conciseness of this publication entitle it to our respect and attention. At sight of its first trip, the bosom of the worst-paid assistant-master will heave with hope. Item, return ticket between London and Paris; item, ticket of admission to Exhibition; item, services of interpreter throughout—total cost, one guinea! As he would not require the interpreter, a possible abatement at once suggests itself. But there are only five of these trips run. Two have taken place, and the remaining three will leave (1) in the middle of July, (2) August Bank Holiday, (3) middle of August. For two guineas Messrs. Gaze offer a choice of three trips, each of which includes two days' hotel accommodation. For three guineas there is a choice of six trips, including either two, three, or four days hotel accommodation—additional advantages being conceded in proportion to the shortness of the hotel stay. There are several four-guinea and five-guinea trips, while for six guineas one may spend a week in Paris, the outlay entitling to return ticket to Paris, *viâ* Dieppe, second class, and return *via* Boulogne, with right of breaking journey at Brighton, Dieppe, Rouen, Paris, Amiens, Boulogne, Folkestone, &c., hotel accommodation available in Paris at Hôtel Gaze, 116, Rue St. Dominique (close to Exhibition), or at any of the towns above mentioned, omnibus between arrival and departure stations and hotel in Paris, two admissions to Exhibition, and services of interpreter throughout.

The programme of Messrs. Thos. Cook and Son shows the usual thoroughness of organisation. There are conducted excursions varying from three to seven days—the inclusive fare from London for a seven days' excursion being £4 11s. (third-class travel with third-grade accommodation), or £5 8s. 6d. (second grade), or £6 8s. (best grade). The same excursion, with second class travel, may be taken for (roughly) £5, £6, £7 respectively, according to the grade of accommodation. First-class travel and best-grade accommodation cost £7 9s. for the week. These fares include rail and boat to Paris and back *via* Newhaven, Dieppe, and Rouen, hotel accommodation in Paris at Cook's Exhibition Hotel, carriage drives in and around Paris, registration fees, transfer to and from hotel, fees to hotel servants, admittance to the Exhibition, free copy of Cook's "Guide Book to Paris," and services of interpreters and guides.

Probably, however, very few of those who visit Paris, especially if for the first time, will be satisfied without some extension of their tour. To accommodate these, Messrs. Cook have arranged a conducted excursion combining Paris (and the Exhibition), Brussels, the Battlefield of Waterloo, and Antwerp, with optional extension to Rotterdam, the Hague, or Amsterdam. These excursions leave London every evening except Sunday. Taking the night service *via* Newhaven and Dieppe, Paris is reached in the morning of the second day. That and the three succeeding days are devoted to visiting the Exhibition, Paris and Versailles. Brussels is reached on the sixth day in time for dinner. The seventh and eighth days are given to carriage excursions for visiting the principal places of interest in Brussels, and the Battlefield of Waterloo. On the ninth day Antwerp is reached, the Cathedral, Museum, &c., are visited, and the return journey is made by night-train and boat *via* Flushing and Queenborough. London is reached on the tenth day. This comprehensive tour may be enjoyed for an inclusive fare of £9—second-class railway. A select conducted party, everything first class, leaves London *via* Dover and Calais for Paris every Wednesday. Paris, Versailles, and Fontainbleau are visited, and the return journey is made on the following Monday. This trip, which is confined to a limited number, costs twelve guineas inclusive.

Dr. Lunn has arranged three classes of tours to Paris—(*a*) five-and-a-half guinea tour, which includes second-class return ticket *via* Dover and Calais, seven days' accommodation at the Pension Robin, 7, Rue du Colisée, Champs Elysées, six tickets of admission to the Exhibition, and carriage to and from the station. (*b*) Seven-guinea tour, with same advantages as the foregoing, with the substitution of the Hôtel Castille for

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[1] On this topic see p. 253 of our present issue.

Pension Robin. This hotel is situated in the Rue Cambon, between the Boulevard des Italiens and the Rue St. Honoré, and is five minutes' walk from the Grand Opera House. (c) Ten-guinea tour, seven days' accommodation at the first-class Hôtel d'Iena, six tickets of admission to the Exhibition, and a day's drive round Paris. Dr. Lunn has also arranged a number of combination tours, so that those who do not wish to miss the Exhibition can go first to Paris and then proceed to various parts of Switzerland. Thus a fortnight's tour may be taken so as to include a week in Paris on the outward journey and a week in Lucerne. The cost of this combined tour is ten-and-a-half-guineas. Or for seven-and-a-half guineas a nine days' Swiss tour may be taken, one day of which could be spent in Paris. A more extensive Swiss tour, combined with a week's stay in Paris, may be had for £15. The entire length of the tour is twenty-five days, and comprises Dover, Calais, Paris, Grindelwald; the Scheidegg, Grimsel, and Furka Passes; returning from Goeschenen by the St. Gothard to Lucerne. Yet another route is Dover, Calais, Paris, Geneva—a nine day's tour, one of which is spent in Paris for six guineas. Or, if a week be spent in Paris, three-and-a half guineas extra. Similar extensions are provided for to Zermatt and Chamounix.

METHODS OF TEACHING MODERN LANGUAGES.

In the latest Report of the Commissioner of the United States Bureau of Education, to which attention has already been directed, are printed the results of an exhaustive inquiry into the position of modern languages in American secondary education, together with a series of valuable recommendations upon methods of instruction and other questions connected with the teaching of French and German. The investigations were undertaken by a committee of twelve appointed by the Modern Languages Association of America at the request of the National Educational Association. One section of the report of the committee is entirely devoted to methods of instruction, and the following abridgment of it cannot fail to prove of interest to modern language teachers in this country. We have taken the five chief systems in the order in which they are dealt with in the original report.

The Grammar Method.

When modern languages first became a regular subject for serious study in secondary schools it was natural that teachers, having no other model to imitate, should adopt the time-honoured plan followed in the department of Greek and Latin. According to this method the pupil is first put through a volume of paradigms, rules, exceptions, and examples which he learns by heart. Only when he has mastered this book is he allowed to read; and even then his reading is regarded as a means of illustrating and emphasising grammatical principles, rather than as a source of literary education. The amount of foreign literature studied by the class is, moreover, extremely small; but it is all carefully analysed and translated, every lesson being, in general, repeated several times. Composition is used as an instrument for increasing still more the student's familiarity with inflections and rules. The foreign language is never spoken, and pronunciation is considered unimportant.

This method has fallen into discredit; and while it is not yet entirely banished from classical instruction, it can scarcely be found, in its original purity, among the modern language courses of any civilised region. It has, however, certain undeniable advantages. In the first place, it trains the mnemonic faculty. Secondly, the careful study of grammatical rules and their nice application in translation and composition form one of the best possible exercises in close reasoning. The principal value of arithmetic and algebra as secondary school studies lies in the fact that in them right and wrong reasoning are immediately and unmistakably distinguished by their results. Now, grammatical analysis and synthesis, while less mechanical and more varied in their operation than elementary mathematics, are nearly or quite equal to it as a means of inculcating the habit of accurate ratiocination.

On the other hand, the grammar method is open to criticism on the ground that it neglects two of the most important objects of foreign language study: the broadening of the mind through contact with the life, the ideas, and the forms of thought and expression of different times and countries, and the cultivation of the artistic sense by the appreciative study of literary masterpieces. A still more potent objection is the contention that pure grammar is not calculated to inspire interest in pupils of the high-school age. This objection seems to be well founded, and, if so, it is a fatal one; for modern pedagogy, if it has accomplished nothing else, has established the fact that interest is absolutely essential to the performance of the best work in any field. It appears, then, that the day of the pure grammar method is past.

The Natural Method.

At the opposite pedagogical pole from the process just described, we find the conversational or "natural" method. This educational "naturalism" is a reaction against the inflexible systematism of earlier teachers. It is a principle, an impulse, rather than a plan; and its products depend, to a greater extent than those of any other school, on the personality of the instructor. Too often the results of a protracted and supposedly successful course of unalloyed conversation are a rapid, but unintelligible pronunciation, the fluent use of incorrect forms, and, worst of all, a most discouraging self-complacency.

What is the genuine "natural method?" In its extreme form, it consists of a series of monologues by the teacher, interspersed with exchanges of question and answer between instructor and pupil—all in the foreign language; almost the only evidence of system is the arrangement, in a general way, of the easier discourses and dialogues at the beginning, and the more difficult at the end. A great deal of pantomime accompanies the talk. With the aid of this gesticulation, by attentive listening, and by dint of much repetition the beginner comes to associate certain acts and objects with certain combinations of sound, and finally reaches the point of reproducing the foreign words or phrases. When he has arrived at this stage, the expressions already familiar are connected with new ones in such a way that the former give the clue to the latter, and the vocabulary is rapidly extended, even general and abstract ideas being ultimately brought within the student's comprehension. The mother tongue is strictly banished, not only from the pupil's lips, but, as far as possible, from his mind. Not until a considerable familiarity with the spoken idiom has been attained is the scholar permitted to see the foreign language in print; the study of grammar is reserved for a still later period. Composition consists of the written reproduction of the phrases orally acquired.

This method—if "method" is the proper term—is based on two general ideas: one true, the other false. The first is the belief that the interest so necessary to the successful prosecution of any study (and especially of language work) can most easily be aroused by the actual spoken use of the foreign tongue. The second is the theory that a boy or man can best learn a new language in the manner in which an infant first acquires its native speech. Hence comes the epithet "natural." The advocates of this view overlook, first, the fact that the child requires eight or ten years of incessant practice to gain even a tolerable command of its own tongue, and secondly, the vast difference between the mind of the baby and that of the youth.

The natural method has been vehemently attacked and just as vigorously defended. At present the violence of the conflict has abated, and we are able to judge dispassionately the results of its introduction into our educational life. Those results have been mainly good. In summer schools and other institutions that have used the imitative process exclusively most of the pupils are persons who have had or will soon get some practice in grammar and reading. For them the conversation lessons are supplementary and form a useful addition to their training. In schools and colleges that have not accepted the "naturalistic" theory the fame of the new method has obliged teachers to adopt some of its practical features, thus bringing much-needed life and variety into their instruction. It seems probable that the next generation will regard "naturalism" rather as a vivifying influence than as an independent method.

The Psychological Method.

Out of the conviction that modern-language study should be made attractive, and out of the desire to adapt instruction to the known workings of the human mind, has come a system that seems more deserving of serious attention than the grammar method or the "natural" style of teaching. This is the system invented by Gouin and brought into general notice by Bétis.

The psychological method rests on the principle of the association of ideas and the habit of "mental visualisation." The whole current vocabulary of a language, in the form of short, idiomatic sentences, is divided up into groups, every group consisting of phrases that are intimately connected in subject. One group forms a lesson. These brief divisions are gathered together in chapters, each of which treats of one general topic, and several chapters make a "series." When a pupil has gone through all the series, with numerous reviews, he will have mastered (so we are told) the whole spoken language. Every lesson is first worked out orally and then studied by the pupil from his book. On presenting each new word to the beginner the instructor exhorts him to close his eyes and form a distinct mental picture of the thing or act represented. This image (it is affirmed) will remain indissolubly connected with the word, and the evocation of the one will always recall the other. Sometimes real objects or drawings are used, and pantomime is frequently resorted to; but in most cases reliance is placed on the child's active imagination. It is never considered a sin to put in a word or two of English, and at the outset that language is very freely employed. Although most of the talking is done by the teacher, the pupils are constantly called upon to repeat his sentences and to answer questions. After the first lessons written compositions may be prepared, made up of phrases already acquired. Grammatical instruction is begun early, concurrently with the other exercises, but the reading of consecutive texts is postponed until the bulk of the ordinary vocabulary has been learned. Many innovations have been introduced into the presentation of grammar, but most of them are more radical in appearance than in reality. Some, however, are extremely ingenious, and will doubtless be copied by instructors who do not see fit to adopt the whole system.

The Bétis method has the following obvious advantages: it trains the memory; it fascinates the student and holds his attention more closely than any other mode of teaching now in vogue; it gives the pupil, in a reasonably short time, a ready command over a large, well-arranged, and well-digested vocabulary; it affords, through some of its conversational groups, an insight into the life of a foreign country. As for the other side, the system seems, as far as we can ascertain the facts, to lay itself open to these criticisms: it affords but little opportunity for the exercise of judgment; it entirely neglects, in the first years, the cultivation of the æsthetic sense, and assigns literary study to a stage which high-school pupils will scarcely ever reach. Moreover, its treatment of pronunciation is decidedly unsatisfactory; but this defect can probably be remedied without disturbing the rest of the scheme.

The Phonetic Method.

Pronunciation, neglected in the three modes of instruction just mentioned, is the very foundation of a system that has of late years attracted attention in all northern Europe, and has gained a considerable footing in Germany and Scandinavia.[1]

The phonetic method resembles the "natural" and the "psychological" schools in that it takes the modern spoken language as a basis and at first relies mainly on oral instruction, using as far as possible the foreign language itself as a medium of communication. Unlike most "conversation" courses, however, it is very systematically constructed and its beginning is strictly scientific. It begins with a training of the ear and the vocal organs, the pupils being thoroughly drilled in the vowels and consonants of the strange tongue. These sounds are considered both as isolated phenomena and as elements of idiomatic phrases. The phrases, in turn, are combined into dialogues, descriptions and stories. At this stage printed texts are used, but only in phonetic notation. The ordinary spelling is carefully kept from the students during the elementary period. It is said that the transition from sound symbols to standard orthography presents no serious difficulty. Objects, pictures, and maps are constantly displayed, and every effort is made to familiarise the class with the surroundings, the institutions, the habits, the character, and the mode of thought of the people whose language they are learning. The phonetic texts gradually increase in length and difficulty, and some of the latest are representative of literature. Inflections and syntax are studied inductively. Composition consists first of the oral and written reproduction of matter already heard or read, then of combinations of familiar phrases. Systematic grammar is reserved for a late stage, and translation comes last of all.

It is evident that this sort of instruction requires a special preparation and a special apparatus. Although the pupils are not taught phonetics, it is essential that the teacher be something of a phonetician; and the present difficulty of obtaining adequate instruction in the science of speech-sounds has doubtless done much to hinder the rapid general adoption of this method.

This method, while it lacks the logical discipline of the old grammatical instruction, is more successful than any other in forming a good pronunciation and in giving pupils a ready and accurate control of the spoken language. The training it affords can hardly fail, moreover, to improve the quality of the student's voice and his enunciation of his mother tongue. From the standpoint of mnemonic education, too, it ranks high. In stimulating interest it is nearly equal to the "natural" and "psychological" courses, and it is second only to the latter in holding the attention. The attempt to give scholars, by ear and eye, by description and by the use of objects and pictures, a correct and vivid idea of foreign life has been carried further by the phoneticians than by any other school; but there is no reason, save the lack of rightly prepared instructors, why this feature should not be introduced into every method ; the neglect of it defeats one of the principal objects of modern-language study. Another means to the same end is the system of international correspondence between school children of different countries.

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[1] The names by which it is known are the "reform," the "new," and the "phonetic" methods.

One of the disadvantages of the "phonetic" plan is that it seems, like other "oral" methods, to overlook the importance of literary education, for it postpones the reading of real books to a stage that is beyond the secondary school period. Familiarity with pronunciation and a certain ability to handle foreign constructions are, indeed, essential to the proper appreciation of the literature ; but if literary study is not reached, of what avail is the preparatory training ? It has been pointed out that oral work, besides exercising the organs of speech, arouses interest and fosters a certain alertness of mind, and is, therefore, valuable for its own sake. We may question, however, whether these benefits make up for the sacrifice of all the æsthetic culture and the intellectual broadening that come only from the reading of good books.

To this criticism European advocates of the method reply that they believe in abundant reading, after the student has mastered the spoken idiom. It appears, then, that the real fault of this programme is that it calls for much more time than can be allotted to foreign languages. In fact, we may well doubt whether, with three or four hours a week for three or four years, pupils would ever reach the end even of the elementary stage ; they certainly would not go beyond it ; their acquisition would be only a fragment. If it is wished to introduce this or any other thoroughgoing method, we should be obliged to increase the importance of French and German in the school curriculum ; and such increase is desirable from every point of view.

The Reading Method.

The title explains itself. The study of texts from the very beginning of the course, abundant practice in translation at sight, leading ultimately to the ability to read the foreign language with ease and without the interposition of English, are the principal features of this programme. Grammar and composition are regarded merely as a help to reading, and are reduced to the essentials ; sometimes accidence and syntax are first learned inductively, but oftener a small text-book is used concurrently with translation. Great importance is attached to the use of good English in the renderings. Pronunciation receives scant attention ; there is little or no oral exercise.

This method has been much used of late in our schools and colleges, especially in those that have large classes, a short course and an American teacher. The great advantage of the process is that it quickly enables the student to read French and German literature—not with the complete appreciation that only an all-round command of the language can give, but with the same kind of intelligence and enjoyment with which good classical scholars read Latin. Indirectly, it helps the pupil to form a good style, and to increase the volume and precision of his English vocabulary ; it cultivates the taste by dwelling upon delicacies of expression ; it exercises the memory through the enforced retention of words and idioms ; it trains the linguistic sense by calling attention to the points of resemblance and difference in various tongues, and the exact fitting of phrase to thought forms an excellent discipline for the judgment.

On the other hand, in addition to the fact that it deals with only one aspect of language, the reading method is lacking in vivacity and in stimulus to the attention ; it interests only the more serious pupils. Moreover, the continued use, year after year, of an easy way of teaching—for it is comparatively easy, and requires but little special training—may prove demoralising to the instructor, dull his appetite for self-improvement, and make him indolent and easily satisfied with his qualifications.

TEACHERS' NOTES ON ENGLISH HISTORY, 1509-1603.

By L. J. McNair, B.A. (Cantab.), and C. S. Fearenside, M.A. (Oxon.).

These "Notes" are similar in aim and scope to those which have already appeared in The School World at intervals between October, 1899, and May, 1900, and which dealt with the period 1603-1715. Taken in conjunction with the first five of the previous six sets of "Notes" they cover the period of English History prescribed for the Cambridge Local Examination, viz., 1509-1688. The authors have simply selected and grouped some of the aspects and events of the period which strike them both as important and as lying within the comprehension of boys and girls in their teens. Of course such a selection and arrangement can never be final or authoritative, but it may be suggestive. The point of view adopted in this particular selection is this: **that the assertion and vindication of the independence of England, both as a Church and as a State, of all foreign control was the dominant characteristic of the Tudor Dictatorship.**

I. Distinctive Features of the Period.

(i.) Increased Power of the Crown, which, rendered necessary by the want of a firm ruler at home and the growth of strong monarchies abroad, depended upon the goodwill of the **middle classes** and the depression of the **aristocracy** (clerical and lay).

(ii.) The Subordination of Parliament, which becomes the tool, usually the willing tool, of the Crown. N.B.—Growth of the **Privy Council** and of **Royal Proclamations,** and the substitution of **Bills of Attainder** for **Impeachment.**

(iii.) The Renascence—geographical and mental. The "Discovery of the World" by Columbus, Cabot and Vasco da Gama, which increased the importance of **maritime states** touching the **Ocean**; and the "Discovery of Man," by the **Revival of Learning,** consequent on the fall of Constantinople and the invention of **Printing.** The Renascence in all its aspects was closely connected with—

(iv.) The Reformation, which, in England, made the **National Church** (*a*) independent of foreign control, (*b*) dependent on the national Kingship. This change in **government** also introduced changes in **doctrine** and **worship.** (Cf. Germany, Scotland, Switzerland.)

(v.) The Extension of the Empire by the **Conquest of Ireland** and attempts at transmarine **colonisation,** resulting from the loss of continental territories in Europe. **(Boulogne, 1550 ; Calais, 1558.)**

(vi.) Growth of Commerce ; consequent upon the establishment of internal peace and order. (N.B.—East India and other **Trading Companies.**)

(vii.) Economic Difficulties, caused by the increased number of **unemployed,** the **enclosure of commons,** and the fall in the value of money, resulting in the *POOR LAW* of **1601.**

II. Divisions of the Period.

(i.) Wolsey and the Balance of Power, **1509-1529.**

(1) *Chief Personalities:* Wolsey, [Louis XII., James IV.] Julius II., Charles V., Francis I.

(2) *Chief Characteristics:* (*a*) at Home: Efficient administration by means of the Privy Council without consulting **Parliament**; ecclesiastical reforms and promotion of Education: (*b*) Abroad: continuation of the Tudor alliance with **Spain** (which includes the "**Burgundy**" of the fifteenth century) and

the English hostility to **France.** Wolsey adapts to European politics the Italian principle of the **Balance of Power.**

(ii.) THE BREACH WITH ROME, **1529-1536.**

(1) *Chief Personalities:* NORFOLK, CROMWELL, MORE, FISHER.

(2) *Chief Characteristics:* The difficulties of the **Divorce** gradually induce Henry, under Cromwell's guidance and with the support of the **Reformation Parliament,** to repudiate the unpopular **Papal Supremacy** and to subordinate the Clergy to the Crown. Compare the mediæval assertions of the **Royal Supremacy** (especially William I., Henry II., Edward III.).

N.B.—The Divorce Question arises mainly out of the difficulties about the English Royal Succession.

(3) *Notabilia:* Insurrection of the Kildares, 1534; *ACT OF THE SUPREME HEAD,* 1535; **Union with Wales,** 1536; Abolition of Smaller Monasteries, 1536.

(iii.) "THE NEW PAPACY," **1536 1547.**

(1) *Chief Personalities:* CROMWELL, CRANMER, Gardiner, Norfolk, Hertford.

(2) *Chief Characteristics:* The Crown is enriched by the confiscation of Church property, but Cromwell's attempt to connect England closely with **German Protestantism** results in his fall, and Henry uses the **Royal Supremacy** to crush **"heresy."**

N.B.—The terms **Catholic** and **Protestant,** which have no universally recognised meaning, should be either avoided or defined.

(iv.) ENGLAND UNDER FOREIGN INFLUENCES, **1547-1558.**

A. German Evangelicals, 1547-1553.

(1) *Chief Personalities:* SOMERSET, NORTHUMBERLAND, CRANMER, Jane Grey.

(2) *Chief Characteristics:* The unpopularity of **Protector** Somerset's inefficient "Protestant" Policy and **President** Northumberland's selfish attempt to change the succession.

(3) *Notabilia:* Battle of **Pinkie, 1547:** Prayer-Book and *Acts of Uniformity,* 1549, 1552: **Rebellions in Norfolk** and in **the West,** 1549: Loss of Boulogne, 1550.

B. Spanish Romanists, 1553-1558.

(1) *Chief Personalities:* POLE, Renard, GARDINER, BONNER.

(2) *Chief Characteristics:* The Papal Supremacy, but not the church property, is restored, England becomes a Spanish dependency, and the **persecution** of the Protestants inspires a hatred of "Popery" and Spain.

N.B.—Each of these short reigns was (*a*) "foreign," (*b*) "extreme," (*c*) unsuccessful: hence both became unpopular and led to reactions.

(v.) ELIZABETH'S CHURCH SETTLEMENT, **1558-1559.**

(1) *Chief Personalities:* BURGHLEY, PARKER.

(2) *Chief Characteristics:* conformity to a settlement which does not endanger **Elizabeth's Title** nor **England's international position,** while pacifying those who place patriotism above theology, is repudiated by Roman Catholics (**Recusants**), and later by extreme Protestants (**Separatists**).

(3) *Notabilia:* Acts of **Supremacy** and **Uniformity, 1559; High Commission Court** (which does *not* date from 1583).

N.B.—How was the Elizabethan Church a *Via Media?*

(vi.) THE SCOTTISH ATTACK ON ELIZABETH, **1560-1570.**

(1) *Chief Personalities:* MARY STUART, Moray, Leicester, WALSINGHAM.

(2) *Chief Characteristics:* The failure of Mary, deprived of French aid on the death of Francis II., to gain such support in Scotland as would enable her to restore Roman Catholicism in Britain.

N.B.—On what assumptions was Mary Stuart's claim to England better than Elizabeth's?

(vii.) THE PAPAL ATTACK ON ELIZABETH, **1570-1584.**

(1) *Chief Personalities:* Norfolk, Grindal, Cartwright, Alva.

(2) *Chief Characteristics:* Pope S. Pius V.'s **Bull of Deposition, 1570,** by compelling Englishmen to choose between native Queen and "foreign" Pope, helps to make England a **Protestant Power,** and aids the growth of **Puritanism.**

N.B.—It does not suit the political convenience of the principal Roman Catholic Powers to support the Pope's attack on Elizabeth.

(viii.) THE SPANISH ATTACK ON ELIZABETH, **1585-1603.**

(1) *Chief Personalities:* DRAKE, RALEGH, ESSEX, PARMA, WILLIAM OF ORANGE, HENRY IV.

(2) *Chief Characteristics:* Philip's championship of the Roman Catholic cause, in consequence of Elizabeth's "policy of pin pricks" in the **Netherlands** and **New World,** results in England's establishing her civil and ecclesiastical independence, and retaliating by an alliance with the **"Huguenot"** Henry IV. against Spain.

III. Miscellaneous.

(i.) MAP WORK: Spanish Dominions; Ireland; The Anglo-Scottish Borders; The Empire; The Netherlands; Drake's voyage.

(ii.) TEXTS (for talks or problem work):—

(1) "No wonder your school raises a storm, for it is like the wooden horse in which armed Greeks are hidden for the ruin of barbarous Troy." [More to Colet.]

(2) "No heresy is so fatal to us . . . as the vicious and depraved lives of the clergy." [Colet, on the state of the clergy in 1520.]

(3) "If you do not remedy the evils which produce thieves, the rigorous execution of justice in punishing thieves will be in vain." [More.]

(4) "The people crowd to look upon us, but not one calls, 'God speed ye.'" [Northumberland, in 1553.]

(5) "A Wyatt, a Wyatt; we are all Englishmen." [London trainbands in 1554.]

(6) "We shall this day light such a candle, by God's grace, in England as, I trust, shall never be put out." [Latimer at Oxford.]

(7) "Nothing under the sun is so dear to me as the love and goodwill of my subjects." [Elizabeth to Parliament.]

(8) "I will do as my father did." [Elizabeth on Church Settlement.]

(9) "Both English and Irish begin to oppose your lordship's orders, and to lay aside their national quarrels." [Browne to Cromwell.]

(10) "No peace beyond the line." [That is the "Papal Line," drawn in 1493, between the possessions of Spain and Portugal, in the New World.]

(11) "I dislike not the match, but I dislike the manner of wooing." [Huntley, after Pinkie.]

(12) "Sheep . . . destroy, consume and devour whole fields, houses and cities." [More.]

(iii.) BOOKS: The *Source-Books* of Professors Hart, Colby and Prothero; the Anglican *Book of Common Prayer:* Seebohm's *Protestant Revolution;* Creighton's *Age of Elizabeth* and *Wolsey;* Motley's *Dutch Republic;* Beesly's *Queen Elizabeth;* Seeley's *Expansion of England* and *Growth of British Policy;* Southey, Froude & Fox-Bourne on English Seamen.

THE scope of the subject-matter covered by the Free Lecture System of New York is both interesting and suggestive. A number of lectures on Great Americans have been given; Washington, Samuel Adams, Jefferson, Hamilton, Jackson, Frederick Douglass, Webster, Lincoln, and Grant have been discussed by different lecturers.

CURRENT GEOGRAPHICAL TOPICS.

By A. J. Herbertson, Ph.D., F.R.G.S.

Peking and Pechili.

One of the greatest acts of the world drama is now taking place in the Far East. It is probable that for many years to come China will form a "current geographical topic." Sixteen months ago we had occasion to discuss the northern plain of China, and the peninsula of Shantung. This month the interest centres round the capital itself, Peking, and the railways which radiate from it. The introduction of the foreign mechanical processes, associated as they necessarily are with foreign ideas, is resisted by a large proportion of Chinese, in many cases, no doubt, through ignorance and prejudice, but, in the case of the more intelligent, from a not unreasonable dread of the far-reaching consequence of the social modifications which must follow from the changed industrial conditions.

Railway concessions have been granted to numerous syndicates in China, but so far the actual work of building the lines has not progressed very far, except in the north round the capital. For many years a railway has run from Taku, at the mouth of the Pei-ho, to the Kaiping coal-fields. That line has recently been extended beyond the pallasades into Manchuria to Chenchou, at the head of the Liaotung Gulf, and to the Nanpao coal mines, and is now being pushed on to Yungkau, and to Hsinmintun. From Taku the line has been constructed through Tientsin to the capital, Peking, which is built on a sandy plain half-way between the Pei-ho and its tributary the Hun-ho. More recently the railway has been extended to the south-west to the capital of Chili, Paoting, about ninety miles from the imperial capital, with a branch to the Choukau coalfields, and it will be carried across the Hwang to Hankau, on the Yangtse-kiang, and ultimately to Canton. Over 400 miles of line already exists in this northern region.

Peking, which with some interruptions has been the capital of China since the twelfth century, is built on the extreme north-eastern confines of the country. It is the meeting place of numerous routes, for here the mountains and desert approach most closely to the sea, and is a commercial, strategic and administrative centre, living by the tolls it extracts by trafficking in commodities and offices.

China has been ruled for centuries by Tatar Emperors, the mounted pastoral nomads being always able to conquer the settled farmers of the plains. To keep the Tatar horsemen out, the Chinese, 2,100 years ago, built their great wall, 1,500 miles long, and for more than a thousand years it served its purpose. The proximity of Peking to the grass lands recommended it to the Tatar dynasty, and Kublai Khan rebuilt it with great magnificence and made it his capital in 1264. Peking is the Cambaluc of Marco Polo. Kublai Khan also carried out another important work by connecting Cambaluc with Kinsay, the modern Hang-chau, by means of a canal more than 600 miles in length, which is thus described by Marco Polo:—"He has caused a water communication to be made in the shape of a wide and deep channel dug between stream and stream, between lake and lake, forming as it were a great river on which large vessels can ply." This canal is now reduced in importance, having been to a large extent supplanted by coastal navigation since steamers have replaced many of the old junks for which the seas were dangerous. It is still navigable, however, between the two great rivers.

The construction of this canal brought the capital within touch of the great highway of the Empire, the Yangtse-kiang, without entirely removing its Tatar character. "Even to-day he passing foreigner must feel at Peking that it is not the throbbing heart of a great country, as London is, as Paris is; but the remains of the magnificent camp of a nomad race, that has settled down, and built in stone after the fashion in which in its wanderings it used to build in wood" ("Intimate China," Mrs. Archibald Little, p. 492).

Peking consists of two cities: the Tatar city, four-and-a-half miles square, surrounded by walls fifty feet high, which contains within it another city—the imperial city—and within that, in its very heart, yet another—the sacred, purple, or forbidden city—where the Emperor and his court live. To the south is the Chinese city, four-and-three-quarter miles by two-and-three-quarter miles, built on the site of the ancient Cambaluc with walls thirty feet high. The walls are pierced by sixteen gates surmounted by tall towers. The dust and dirt are indescribable, but the city nevertheless contains a number of very fine buildings.

The usual route to the capital before the opening of the railways was to ascend the Pei-ho to Tungchau, about ninety miles above Tientsin, taking four or more days in a Chinese boat, and thence a dozen miles by road. And such a road! It was built by the Ming dynasty about four centuries ago, and has seemingly never been repaired since. "There was the road, with huge blocks of stone, some of them five feet long, and wide and thick in proportion, but sometimes worn away, sometimes clean gone."

The province of Pechili, or Chili, lies west of the gulf of the same name. A tongue of land stretches southwards across the Hwang ho to 35° N. It is bounded on the north by the Sira Muren, 43° N. Its position resembles that of Spain or of the part of North America between Cape Hatteras and Boston. Its area is about 60,000 square miles, and its population 18,000,000 (compare England, 50,000 square miles, population 20,000,000 in 1891). The southern portion of the province is part of the great plain described in The School World of February, 1899. The northern part is hilly, consisting of the outer ranges of the Khingan mountains, rising to over 4,000 feet in the north-west. The northern half has a severe climate, and is but sparsely peopled. The line between the north and south can be followed on any map, as it is that of the southern loop of the Great Wall.

The climate of Peking is one of considerable extremes, the temperature reaching to 80° F. in summer, falling to 20° F. in winter. Most of the rain is precipitated between May and September, July being the rainiest month. The loess-covered plains of the south are fertile, producing maize, millet, wheat, tobacco, and even cotton.

Besides Peking the imperial, and Paoting, the provincial capital, the chief cities of Pechili are Kalgan and Tientsin. Kalgan, or Changkiakou, is built at the Great Wall, where the route through the Nankou Pass crosses it, and passes onwards across the desert of Gobi to Urga and Siberia. Tientsin, the port of Peking, from which it is some seventy miles distant in a straight line, lies about forty miles from the mouth of the Pei-ho. It is the inlet for the imports of north-eastern China and the articles carried across Mongolia, and the outlet for their products—wool, skins, furs, bristles. Its population is probably over 1,000,000, and perhaps is even greater than that of Peking.

Considerable additions to the Richmond (Yorks) Grammar School premises have just been completed. The building of the new schoolhouse alongside the existing premises was not practicable, but a site has been secured on the north side of the town. Enclosed within the grounds of the new schoolhouse is the Grey Friars' tower, the remains of a monastery supposed to have been founded in the middle of the thirteenth century.

HOW TO SECURE A DIPLOMA IN TEACHING.

FROM inquiries that reach us from time to time we learn that comparatively few teachers know how, if they wanted to, they should set about getting a diploma testifying to their ability to teach, and of their knowledge of the theory and history of education. It is true that, up to the present, little encouragement has been given to secondary schoolmasters and schoolmistresses to study either the one or the other. But we confidently believe that this will soon be changed. In view of the recommendations of the Secondary Education Commission, and the increase of public interest in education, the register of secondary teachers cannot be long delayed. When such time arrives, there can be little doubt that men and women who, in addition to being competent teachers, possess credentials as to their knowledge of the theory and history of their profession will become a class apart. Moreover, if we read the signs of the times aright, it will not be many years before a place on such a register of teachers will necessitate the possession of some recognised certificate attesting the teacher's knowledge of educational principles.

Apart, however, from these utilitarian considerations, the intrinsic interest of the subjects themselves would justify us in urging teachers to make a formal study of the subjects usually demanded of candidates for a diploma in teaching. As soon as a schoolmaster becomes acquainted with the experiences and observations of successful teachers who have preceded him in the work of forming character, he begins to appreciate the fact that he, too, may become an observer and help to build up that perfect system of education of which we all dream, but which in our waking hours seems so far away. This discovery transforms his view of class-room work. Instead of appearing mere drudgery, a difficult way of obtaining the necessaries of life, it becomes transfigured into a congenial task which supplies interest, dispels introspection, and converts the stupid boy into a living problem which must somehow be understood. Surely, then, no excuse is needed for bringing together, in convenient compass, what the Universities and the College of Preceptors have done to enable teachers to possess some guarantee of their theoretical knowledge and general efficiency. The official regulations, from which the information has been abstracted, can in each case be obtained by application to the authority concerned.

The Oxford Scheme.

Oxford University, by a statute passed on November 24th, 1896, and renewed on May 9th, 1899, decided to grant a Diploma in the Theory, History and Practice of Education. The diploma is awarded after the candidate has passed a written examination on the theory, history and practice of education, and has given proof of efficiency as a teacher; that is, that he is competent both to teach a class well and to maintain discipline. One or two examinations are held every year and are open to the following persons:—

(1) Members of the university who have entered on the eighth term from their matriculation, and have passed all the examinations qualifying them to enter for the second public examination.

(2) Men who have qualified for a degree at some recognised university.

(3) Women (*a*) who have passed the delegates' second examination for women (honours), the second public examination, or have taken honours in the first public examination; (*b*) who hold Tripos certificates of Cambridge; (*c*) who are graduates of a recognised university.

Before a candidate can obtain a diploma, three conditions must be satisfied. A course of practical training at Oxford must have been gone through, and evidence of ability to teach be produced. The written examination referred to above must be passed. A certificate of power to maintain discipline, from the head of an approved school in which the candidate has given at least one hundred lessons, must be secured.

The course of training at Oxford falls into two divisions, (*a*) *theoretical side*, which means attendance at two or three lectures a week and reading under guidance; (*b*) *practical side*, including the preparation and delivery of regular courses of lessons in secondary schools under the guidance and supervision of the lecturers and tutors. The stress laid upon tutorial assistance and individual guidance is a special feature of the Oxford scheme.

In the case of candidates who are already teachers in schools, a certificate can be obtained provided (1) a year's teaching has been done in a recognised secondary school, (2) that at least one holiday course at Oxford has been attended, (3) the candidate's efficiency as a teacher has been attested by persons appointed for the purpose. The written examination, which must be passed before the Oxford diploma can be secured, consists of four parts, the elements of pyschology as bearing on education, the history of education in Europe from 1720 to 1800, practical knowledge of educational method, and a special subject in the choice of which great latitude is allowed.

Cambridge Diploma.

The University of Cambridge holds two examinations in the year, one at about half-a-dozen different centres in June, and one at Cambridge and in London in December. Candidates must be twenty years of age and have passed one of some thirteen examinations which are enumerated in the regulations, and which include the Senior Local Examinations of Oxford and Cambridge and the London University Matriculation. The written examination includes four papers, one each on the theory of education, including both the scientific basis and the elements of the art of education; the history of education in Europe since the Revival of Learning, the special subject for 1901 being "Herbart's Letters and Lectures on Education"; and the practice of education, which is subdivided into method and school management. A fourth paper, containing a small number of questions of an advanced character on each of the three subjects mentioned, is also set.

Certificates of practical efficiency in teaching can also be obtained by candidates who, having secured the certificate in theoretical knowledge, are able to supply evidence of having been engaged for a year in teaching in a recognised school; provided the candidate is considered worthy after (*a*) an examination of the class he has taught, (*b*) an inspection of his class while being taught, (*c*) questions have been put to him in private after this inspection of his class, and (*d*) a report from the head of his school on his work has been taken into account.

London University Certificate.

The University of London only examines its own graduates. The examination is held once a year in December in:

(1) Mental and Moral Science in their relation to the work of teaching. The questions have no special reference to the writings of any one author or school of authors. In matters of opinion answers are judged according to their accuracy of thought and expression.

(2) Methods of teaching and school management.

(3) The history of education: which includes the lives and works of eminent teachers, and the systems of instruction in foreign countries. The special subjects for 1901 will be Locke's "Thoughts on Education," Herbart's "Letters and

Lectures on Education," and three papers from Volume iii. of "Special Reports on Educational Subjects," published by the Board of Education.

(4) Practical skill in teaching, which is tested by means of a lesson given to a class in the presence of the examiner at some school in London. The lesson has to be based on notes of a lesson prepared by the candidate on the first day of the examination.

Durham and Victoria Certificates.

At Durham candidates for a teaching diploma must previously have passed some approved examination in general education. It may be stated that, as at Cambridge, considerable latitude is allowed; the London University Matriculation is here also considered sufficient.

A written examination, including three papers, must be passed. Papers are set on mental and moral science, teaching and school management, and on set books in the History of Education. For 1900-1901 Davies and Vaughan's translation of Plato's "Republic," Books i.-iv.; Langé's "Apperception," and Quick's "Educational Reformers" are prescribed.

Candidates must also produce satisfactory evidence of practical skill in teaching, which is judged (*a*) by a report on work actually done in some approved school or schools, including reports on lessons and class management; (*b*) by a lesson given before one or more of the examiners.

Graduates of a university of the United Kingdom are alone eligible for the Victoria University diploma. There are here, too, written and practical examinations. But before admission to the examination candidates must present certificates of attendance upon prescribed courses in logic, psychology, and ethics with special reference to education, as well as in general and special method, in the history of educational theories, and some foreign educational system.

Candidates are also required to furnish evidence of having taught for 150 hours in an approved school and of having attended 25 criticism lessons. Those who present certificates of having attended degree courses on logic, psychology and ethics are exempted from attendance upon prescribed courses in these subjects.

Edinburgh Scheme.

The Edinburgh diploma is of two grades, viz.: secondary school diplomas and general diplomas. The former is for Masters of Arts with Honours and testifies to their fitness for masterships in secondary schools as well as stating the special subject in which the holder of the diploma is qualified. The general diploma is for those who have taken a pass M.A.

Graduates of universities other than Edinburgh may enter for the certificate, but they must matriculate at Edinburgh first. Each candidate must attend the class in the theory, art, and history of education at Edingburgh, and pass an examination conducted by the Professor and an appointed examiner. But in addition to this, evidence must be forthcoming either that the candidate has (*a*) attended a course of practical instruction as a Queen's Scholar in a training college, or, (*b*) gone through a complete course of practical training in a training college.

Those desirous of obtaining the secondary school diploma must spend a month in a secondary school, or complete a practical course at St. George's Training College, Edinburgh, and pass the practical examination held at Cambridge (see *ante*). Each candidate must also satisfy the university of his practical aptitude as a teacher.

College of Preceptors.

The diplomas awarded by the College of Preceptors are of three grades, viz.: Associate, Licentiate, and Fellow. Candidates for the Associateship must give evidence of having had at least one year's experience in teaching, or of having attended at least two courses of lectures at the college or at an approved training college, and of having obtained a satisfactory certificate from the Lecturer, or, in the case of a training college, from the Principal.

Candidates for the Licentiateship must have had two years, and for the Fellowship five years, experience in teaching.

The examination for all grades of diplomas consists of papers in the subjects of a secondary school education together with the theory and practice of education. But graduates and persons possessed of certain approved certificates in general subjects are excused everything but the papers in pedagogics. For the Associateship and Licentiateship, physiology, psychology and the practice of teaching must be offered, together with the elements of logic in the latter examination. Candidates for the Fellowship are examined in ethics, the theory and history of education, and the government of a school, in addition to the subjects of the lower grade diplomas. Special certificates are awarded for ability to teach to holders of a diploma who satisfy the examiners in (1) a lesson given according to notes specially prepared by the candidate and submitted beforehand, and (2) a lesson given by the candidate with only half-an-hour's preparation; in each case the class is afterwards examined.

REASONS FOR THE SUCCESS OF GERMAN EDUCATION.

Professor Hugo Münsterberg, who occupies the Chair of Psychology at Harvard University, deals, in a powerful contribution to the May number of *The Atlantic Monthly*, with the chief modern tendencies of American education. The whole idea of what is called, in America, "elective studies," as well as the agitation to give all teachers in American schools a preliminary training in pedagogics and psychology, are very severely criticised. The convincing exposition which the professor puts forward of the main causes of the success of the German system of education, and the skilful way in which the shortcomings of the American programme for raising the standard of attainment in the high schools of the States are laid bare, should ensure the careful study of this article on "School Reform" by educationists in every country.

After demonstrating that a German boy of average standing, at the age of eighteen, has reached the same scholarly level as an average American college graduate of twenty-one years of age, Professor Münsterberg proceeds to demolish the illusion, popular in this country as well as on the other side of the water, that the satisfactory result is brought about by the over-pressure prevalent in German schools. But we cannot do better than reprint a few remarks from the original paper.

> "I reached at the end of my school time, as a pupil of average standing, the scholarly level of an average college graduate in this country. I was then eighteen years of age; the average bachelor of arts is at least three years older. How did that difference come about? The natural explanation of the case is that we poor boys were overburdened, systematically tortured by a cruel system of overwork, which absorbed all our energies for the one goal, the passing of the examination. I do not dare to contradict. But the one thing I may claim in favour of this scheme of overloading is the wonderful skill with which the school administration was able to hide these evident facts so completely from our eyes that neither my classmates nor I, nor our parents, nor our teachers themselves, ever perceived the slightest trace of them. The facts were so shamelessly concealed from us that we poor deceived boys thought all the time that the work was a pleasure, that we had leisure for

> everything, and that every one of us was as happy as a fish in water.
>
> "I think that I spent, during all those ten years, about three hours a day in the fresh air, walking and playing, swimming and skating; yet I found time from my ninth year to practice on the violoncello one hour every day, and the novels which I wrote may have lacked everything else, but they never lacked length. Besides such individual schemes to fill our vacant time, we co-operated for that purpose in clubs, from the lowest classes to the highest. At ten years we played instructive games; at twelve years we read classical dramas, each taking one rôle; at fifteen we read papers on art and literature, and at seventeen we had a regular debating club. And all the time, at every stage, there were private theatricals, and excursions into the country, and dancing lessons, and horseback-riding, and co education with the education left out; for the poor overburdened girls helped us to bear the load by suffering in common."

But this is merely negative; it does not point out the reason for the more satisfactory condition of things educational in Germany. Professor Munsterberg gives two main causes for the successful education of his native country. These are, first, the knowledge of his subject possessed by the German schoolmaster and the enthusiasm with which he teaches; second, the thorough co-operation between the home and the school.

> "I had no teacher who hastily learned one day what he must teach me the next; who was satisfied with second-hand knowledge, which is quite pretty for entertainment and orientation, but which is so intolerable and inane when we come to distribute it and to give it to others. I had from my ninth year no teacher in any subject who had not completed three years' work in the graduate school. Even the first elements of Greek and mathematics, of history and geography, were given to us by men who had reached the level of the doctorate, and who had the perspective of their own fields. They had seen their work with the eye of the scholar, and thus even the most elementary material of their science was raised to the height of scholarly interest. Elements taken for themselves alone are trivial and empty everywhere, and to teach them is an intolerable drudgery, which fills the school-room with dulness and the pupils with aversion. Elements as the introductory part of a scholarly system are of ever new and fascinating interest, more promising and enjoyable than any complex problems. . . . . A man who has ever really taken a scholarly view of his science can never find in that science anything which is quite uninteresting. Such enthusiasm is contagious. We boys felt that our teachers believed with the fulness of their hearts in the inner value of the subjects, and every new bit of knowledge was thus for us a new revelation. We did not ask whether it would bake bread for us. We were eager for it on account of its own inner richness and value; and this happy living in an atmosphere of such ideal belief in the inner worth and glory of literature and history, of science and thought, was our liberal education."

Of the assistance unconsciously rendered by German parents the professor writes:-

> "I do not mean that we were helped in our work, but the teachers were silently helped by the spirit which prevailed in our homes with regard to the school work. The school had the right of way; our parents reinforced our belief in the work and our respect for the teachers. A reprimand in the school was a shadow on our home life; a word of praise in the school was a ray of sunshine for the household. The excellent school books, the wise plans for the upbuilding of the ten years' course, the hygienic care, the external stimulations—all, of course, helped toward the results; and yet I am convinced that their effect was entirely secondary compared with these two features—the scholarly enthusiasm of our teachers, and the respect for the school on the part of our parents."

The delightful picture of his own school experiences serves Professor Münsterberg as an introduction to a careful consideration of the plan of "elective studies" and the many things which are promised as the result of teaching pedagogics and psychology to young schoolmasters. Neither of these expedients will, it is maintained, lead to what is expected of it. But we must refer our readers to the original paper for the arguments by which the results are deduced. Of one thing we are sure, it is a long time since so helpful a contribution has been made to the vexed question of how to train our teachers.

OUTLINES OF A COURSE OF ENGLISH LITERATURE.

THE syllabus of a course of instruction in English literature, published in the new "Code of Regulations for Evening Continuation Schools," will interest teachers of English in secondary schools. The scheme has been prepared by the Board of Education as an indication to teachers of evening classes, for former pupils of public elementary schools, how they may create and foster a love of our national literature on the part of the young people who as a rule earn their living by "the sweat of the face."

The pleasures of life are not so numerous that we can afford to neglect the keen enjoyment to be derived from a familiarity with some of the things which have been well and truly said by the great writers whose memory and works are cherished by all lovers of the English language. We reprint the scheme of instruction as it is given in the official "Code," believing that it will be of assistance to teachers in secondary schools who desire to do something towards cultivating that regard for literature which is necessary to make a really intelligent citizen.

ENGLISH LITERATURE.

"In literature we have present, and waiting ready to form us, the best which has been thought and said in the world."—M. Arnold.

"Literature consists of all the books and they are not so many where moral truth and human passion are touched with a certain largeness, sanity, and attraction of form."—J. Morley.

[This Course, which covers a good deal of ground, should not be taken unless at least two or three hours' instruction can be given in each of the numbered sections; it may be conveniently followed in a second year by the detailed study of one or more of them, together with part of the work of the chief authors considered. Schemes for such instruction should be approved by the Inspector.]

A. Hints to Teachers.

It is impossible to *teach* English literature in a course of lectures; your object must therefore be to *awake interest* in it. Keep in mind the continuity and development of literature: but dwell mainly on the greatest writers. Do not give lists of minor folk. It is not worth while *merely naming* any writer if you have not time to do more. Read out good passages, and at the end (but not in the middle), explain why they are good. Encourage the students to read widely for themselves, in unannotated texts and the better anthologies, and, if they like it, to learn lyrics or short passages by heart. On the whole, it is perhaps best not to put a primer into their hands until the course is finished; then one may be used for revision.

Literature does not lend itself much to an appeal to the eye, but the exhibition of portraits, rare editions, and facsimiles of handwriting serves to stimulate interest. Do not forget local associations. Where such exist the rule of exclusion of minor writers should be modified. Chatterton is not Shakespeare, but if you are teaching at Bristol you will visit St. Mary's Redcliffe, just as at Stratford you will visit the birthplace and Anne Hathaway's cottage.

The lives of authors should be told only so far as they affected their work. A man's surroundings, such as the landscape of his home, give him local colour. Episodes which bring out character (*e.g.*, Sidney at Zutphen) are valuable. But avoid accidentals; an enumeration of the posts at court held by Chaucer is useless.

Do not be precise about dates; there are no dates of importance in English literature; it is sufficient to remember what great writers were roughly contemporary, and the larger chronological periods, centuries and reigns, in which they fall.

B. Syllabus.

(1) What is literature? It may be approached either for relaxation ("light" literature), or for instruction (philosophy, science, history in certain aspects), or for knowledge of, sympathy with, and pleasure in the spiritual life and history of humanity (poetry in the widest sense). The permanent and transient elements of poetry. Writers are the children of their age, and their works reflect their infinitely various personalities; but all great writers express, in their own way, the central truths and interests of human nature.

[The above is only suggestion. Every teacher must state the nature and aim of literature *as he sees it*. It is useless to repeat mere *formulæ* borrowed from text books. In any case do not dwell long upon abstract definitions of literature. Get to the concrete writers. But keep your general conception of the ideals of literature before your own mind, and select your topics and methods of instruction so as insensibly to illustrate it.]

The making of English. The Anglo-Saxons. Their heathen lays. Beowulf. The gleemen. The coming of Christianity. Caedmon. Alfred. The Norman Conquest. English swamped by Norman French. The Celtic fringe and its bards. Romance.

(2) English literature begins again. Its debt to French. The Renaissance. Chaucer. How he sums up the literary tendencies of his age His romance and realism. Wyclif and English prose.

(3) Literature withers during the wars of the Roses. Importance of printing. Caxton. Malory. The Renaissance again. The humanists. Wyatt and Surrey. Literature withers again during the disputes about religion. Exception in the English Bible and Prayer Book.

(4) Elizabeth. Growth of national life and patriotism. Spenser, Sidney. Their influence. Elizabethan lyric and pastoral.

(5) The origins of drama. Its position in Elizabethan society, the city, the court. Marlowe, the first great dramatist.

(6) Shakespeare: his life and plays. Roughly, the plays fall into four chronological periods: the Histories, *e.g.*, "Richard II.," "Henry IV.," "Henry V.;" the Comedies, *e.g.*, "As you Like It," "Twelfth-night;" the Tragedies, *e.g.*, "Hamlet," "Macbeth," "Lear;" the Romances, *e.g.*, "Cymbeline," "The Tempest." (Only one or two plays should be treated with any detail.)

(7) Elizabethan prose. Its application to the literature of knowledge by Bacon, Hooker, Raleigh.

(8) From Elizabeth to James. The courtly poets, Donne, Herrick, Carew. Growing artificiality of lyric. The religious poets, George Herbert, Vaughan.

(9) Puritanism and poetry. Milton.

(10) The Restoration. Influence of French literature. Common sense and lucidity became the literary ideals. The age of prose begins. Dryden.

(11) Prose, and prosaic poetry. The "classic" ideal. Pope. Swift. Johnson.

(12) The re-action from prose. Feeling for romance, for nature. The first comes to a head in Coleridge, the second in Wordsworth.

(13) Later developments of romanticism. Shelley, Byron. The worship of beauty. Keats.

(14) Nineteenth century prose. History. Macaulay, Froude. Social speculation. Mill, Carlyle, Arnold, Ruskin.

(15) The beginnings of the novel. Its nineteenth century development.

(16) Tennyson sums up the ideals of his age. A new impulse to the study of the individual. Browning.

OXFORD LOCAL EXAMINATIONS.—SET SUBJECTS FOR 1901.

The regulations for the Senior, Junior and Preliminary Oxford Local Examinations for 1901 are now published. The special subjects prescribed are as follows:

Preliminary.

Religious Knowledge.—(*a*) Joshua i.-xiv., xxiii., xxiv., (*b*) St. Matthew xi.-xxviii., (*c*) Acts xvii.-xxviii.

English History.—Either the Outlines from 1399 to 1603, or the Outlines from 1715-1820.

English Author.—"Poems of England" xi.-xvi., xxv.-xxviii., xxxii.-end. (Macmillan.)

Geography.—Asia. Full knowledge of England and France.

Elementary Latin.—"Tales of the Roman Commonwealth." Part I. By J. B. Allen. (Clarendon Press.)

Elementary French.—"Seulette." By Madame de Pressensé. (Hachette.)

Elementary German.—"Der Schlüsselbund" and "Jagderfolge." From E. S. Buchheim's "Short German Plays." (Clarendon Press.)

Elementary Italian.—Carcano's "La madre e il figlio." (Hachette.)

Junior.

Religious Knowledge.—(i.) Either (*a*) Joshua i.-xiv., xxiii., xxiv.; Judges i.-ix.; or (*b*) Acts xiii.-xxviii; or (*c*) Prayer Book, and

(ii.) Either (*d*) Psalms i.-xli. (omitting ix.-xii., xviii., xxx.-xxxv.), or (*e*) St. Matthew.

Ancient History.—The Outlines of Roman History from 343 to to 146 B.C., with special questions on the Second Punic War.

English History.—Either, the Outlines from 1399 to 1603, with special questions on the reign of Elizabeth; or, the Outlines from 1715 to 1820, with special questions on the period 1784-1815.

Shakespeare.—"Henry V."

Poems of England.—(Macmillan.)

Geography.—General:—Europe and Asia.

Special:—England and Wales, British South Africa and France.

Commercial Geography.—British Possessions in Asia and Australasia.

Elementary Politics.—Strachey's "Industrial and Social Life and the Empire." (Macmillan.)

Latin.—Cæsar, De Bello Gallico, VI., and Virgil, Æneid, I.

French.—Dumas' "La tulipe noire" and Paul Féval's "Chouans et bleus."

German.—Riehl's "Seines Vaters Sohn" and "der Gespensterkampf." (Clarendon Press.)

Italian.—As in Preliminary.

Spanish.—Cervantes "El Cautivo." (Hachette.)

Welsh.—"Drych y Prif Oesoedd," Part I. By Theophilus Evans.

Senior.

Religious Knowledge.—(i.) Either (*a*) Joshua, i.-xiv., xxiii., xxiv. ; Judges, i.-xviii. ; or (*b*) Acts, xiii.-xxviii. ; or (*c*) The Epistle of the Galatians and the Epistle of St. James ; or (*d*) St. Matthew in Greek ; or (*e*) Perry's "History of the English Church" (Murray), First Period, pp. 1-497 (6th edition) ; and

(ii.) Either (*f*) Psalms, i.-xli. (omitting ix.-xii., xviii., xxv.-xxxv.) ; or (*g*) St. Matthew.

Ancient History. The outlines of Roman History, from 343 to 146, B.C., with special questions on Second Punic War.

English History.--Either from 1399 to 1603, or from 1715 to 1820.

Shakespeare's "Henry V.," together with either Shakespeare's "Merchant of Venice," *or* Byron's "Childe Harold," Canto III.

Geography.—General : - Europe and Asia.

Special :—British Isles, British South Africa, France, Scandinavia.

Elementary Politics.--Lewis's "On the Use and Abuse of some Political Terms." (Clarendon Press.)

Latin.—Virgil, Æneid I. ; Horace, Odes IV., with Epistles, Book II. ; Livy V. ; Cæsar, De Bello Gallico, IV.-VI.

Greek.--Euripides, Alcestis ; Sophocles, Antigone ; Zenophon, Anabasis I., II. ; Thucydides VII. (c. 19-end).

TECHNICAL EDUCATION IN LONDON.

THE Annual Report of the Technical Education Board of the London County Council, which was presented to the Council on May 29th, gives a general survey of the work of the Board during the past year. Much progress has been made in the work of polytechnics and technical institutes. There are now four institutions directly controlled by the Board, *i.e.*, the London County Council Central School of Arts and Crafts, the London County Council School of Photo-engraving and Lithography, the Camberwell School of Arts and Crafts, and the Shoreditch Technical Institute. The last-named institute was opened by the Board last October in buildings formerly occupied by the Haberdashers' Schools ; extensive alterations have been made, new workshops erected, and a series of trade classes established mainly for persons engaged in the furniture and cabinet trades.

The work of the London County Council Central School of Arts and Crafts continues to grow, and additional premises have been secured for the accommodation of new classes pending the acquisition of a permanent site. The students of the Central School specially distinguished themselves in the Board's competition for art scholarships, and much of the work received a favourable report from Mr. Walter Crane, who undertook the examination. The Council's School of Photo-engraving and Lithography has also undergone further extension and the work of the school has shown a decided advance during the past year. Many of the London polytechnics have made further developments in their work, notably the Borough Polytechnic, the Northern Polytechnic at Holloway, and the South-Western Polytechnic at Chelsea ; and the total number of evening students attending the nine polytechnics aided by the Board continues to show an increase.

The organisation which the Council has established as the local authority for technical education under Clause VII. of the Science and Art "Directory" has now been joined by 53 institutions, and the working of the Clause has assisted the Board in coming into closer touch with the various institutions. Steps have been taken during the past year for the co-ordination of the evening classes conducted by the Technical Education Board and the School Board for London, and certain proposals for carrying out this object have been adopted by both bodies. The establishment of the New University of London is likely to have an important bearing on the Board's work, especially as regards that carried on under the new faculties of Engineering and Economics. The Board has voted £2,500 a year towards the support of each of these faculties, and its total grants to university institutions now amount to £10,000 a year.

Steps have been taken for the development of commercial education not only by recommending the Council to set aside a site in Clare Market for the new building in connection with the Faculty of Economics, but also by establishing a commercial department at University College School, and the award of 20 commercial scholarships tenable at the department. The Council has voted the sum of £180,000 for the purposes of technical education during the coming year.

ITEMS OF INTEREST.

GENERAL.

NOBODY now expects that the Secondary Education Bill will become law this session, though the Duke of Devonshire hopes to introduce the Bill in the House of Lords very soon. It seems more than probable that a general election will occupy public attention between the drafting and passing of this long-deferred measure.

ONE of the attractions provided this year for the visitors, educational and lay, at the Open Day of the Women Teachers' Training College. Cambridge, is of especial interest to readers of THE SCHOOL WORLD. This was the performance of Mrs. J. G. Fraser's original French play, *Tel Maître, Tel Valet*, which first appeared in these columns in our issues for October and November last year. The performers--boys and girls of from nine to thirteen years of age -had been thoroughly rehearsed by Mrs. Fraser herself, and brought out exceedingly well both the wit of the dialogue and the humour of the situations devised for their interpretation. The stage properties—busts of Milton and Shakespeare and telephone--which looked rather formidable in the printed stage directions, were adequately represented. Altogether the performers enjoyed doing the play, and the audience was so appreciative that the performance had to be repeated. The success of the performance warrants our warm recommendation of the play to teachers in search of prize-day entertainments.

THE LORD BISHOP OF ROCHESTER presided over a meeting at the Church House, Westminster, on June 15th, called together to further the interests of St. Gabriel's College, Kennington, the first new Church Training College which has been undertaken for more than twenty-five years. In addition to the accommodation required for the eighty resident students, who must be members of the Church of England, St. Gabriel's College will make provision for eighty non-resident teachers in training who will not be subjected to a religious test. As we have already pointed out, Miss Bishop, late of the Royal Holloway College, is the Lady Principal, and she is sparing no pains to make St. Gabriel's one of the foremost training colleges for women. The cost of the new buildings, including the freehold site, will be at least £42,000, and a very strong appeal is made by the Executive Committee for contributions. As was pointed out at the meeting by both Sir Joshua Fitch and Sir

Richard Jebb, the indirect influence of training colleges upon secondary education is sufficiently real to give St. Gabriel's a strong claim upon the friends of secondary education.

The General Committee for securing the presence of women on Secondary Educational Authorities, which was recently formed, has appointed an Executive Committee, with Professor Sir R. C. Jebb, LL.D., M.P., as chairman, and it has now started on its work. It will be necessary for the Executive Committee to raise a sum of money, which, it is estimated, should amount to not less than £100 a year for the next two or three years, in order to enable it to carry on its operations efficiently, and all who are in sympathy with the aim of the committee are invited to send contributions (from five shillings upwards) for this purpose to Mr. Herbert B. Garrod, Hon. Treasurer, 72, Compayne Gardens, West Hampstead, N.W.

Several new regulations are given in the new Directory of Science and Art Schools and Classes under the Board of Education at South Kensington. Compulsory examinations in the elementary stages of science and art subjects are abolished, for they will only be held when special application is made, and a fee will be charged for every paper applied for on behalf of the students. New schemes of work have been drawn up for Schools of Science in rural districts, and in these schools separate courses are prescribed for boys and girls.

The subjects for the elementary (or first and second years) and advanced (or third year) courses for boys are as follows:—Elementary Course, *obligatory subjects*. (1) Mathematics; (2) Chemistry (with practical work); (3) Physiography (Section I., consisting of elementary physics and chemistry) or Elementary Physics (with practical work); (4) Biology or Elementary Botany (practical work may be in the field or garden); (5) Drawing, Practical Geometry or Practical Mathematics. Manual instruction in its application to workshop and garden must also form part of the course. The alternatives selected for the second year may differ from those of the first. Advanced Course: Five or six of the following subjects may be selected to form the course:—(1) Principles of Agriculture (elementary or advanced, with practical work); (2) Chemistry applied to agriculture (with practical work); (3) Botany (with practical work); (4) Biology (with practical work); (5) Physiology (human and animal); (6) Geology (with field work); (7) Zoology.

The subjects to be taken by girls in Schools of Science in rural districts are:—Elementary Course, *obligatory subjects*: (1) Elementary Mathematics; (2) Physiography (Section I., consisting of elementary physics and chemistry); (3) Biology; (4) Botany or Hygiene (obligatory in the second year only); (5) Freehand Drawing or Elementary Practical Geometry. Physics or Chemistry may be substituted for Physiography in the second year. Advanced Course, *obligatory subjects*: (1) Mathematics; (2) Botany or Biology; (3) Hygiene or Physiology; (4) Physiography or Physics or Chemistry; (5) Principles of Agriculture (poultry-keeping, dairying, bee-keeping, &c.). *Optional subjects*: one of any of the above subjects not taken, or either Geology or Zoology, or an approved art subject. These courses differ slightly from those which are followed by urban Schools of Science. Another new regulation is that the laboratories in Schools of Science must be available for preparation work by students of the school beyond the school-hours of the time-table.

Not the least interesting items in the programme of the University Extension summer meeting, the first part of which will be opened at Cambridge on August 2nd, with an address by Mr. A. J. Balfour, M.P., are the conferences and educational discussions which have been arranged upon various subjects. A conference on "The Co-ordination of Educational Agencies" will be held on the afternoon of August 4th, when the Right Rev. Lord Bishop of Bristol will preside. The discussion will be opened by Dr. R. D. Roberts; Prof. Sir R. C. Jebb, M.P., and the Right Hon. Sir J. E. Gorst, M.P., will be present. The following educational questions will be discussed at special meetings:—(1) "The conditions of admission to the register of teachers to be formed under the provisions of the Board of Education Act." (2) "The teaching of the mother-tongue and national literature in schools and universities." (3) "The drawing together of different nations in educational matters, and the limitations on the interchange of (*a*) the methods and (*b*) the ideals of different countries." (4) "The teaching of geography." The last discussion will be under the auspices of the Geographical Association. The subject will in each case be opened by one or two papers, and the discussion will then be thrown open. Teachers of all grades will evidently find much to interest them in the meeting.

Mr. W. H. D. Rouse, M.A., of Rugby School, has been unanimously elected honorary secretary of the Assistant-Masters' Association. We learn that great changes in the constitution of this association are in contemplation. It is proposed to increase the annual subscription, and to appoint a paid secretary who will devote the whole of his energies to the work of developing the association. The *Circular to Members*, for May, refers to a fear entertained by some members of the Executive Council that an increase of the subscription will cause a diminution in numbers. The increased subscription will amount to a little over twopence a week, and if assistant-masters are not equal to this amount of sacrifice, they cannot expect the general public to take their grievances very seriously. We refuse to believe, however, that the assistant-master will not prove equal to the increased demand, and we heartily hope that there is a useful future before the association. But very much will depend upon the new secretary to be appointed.

An important "Draft of an Order in Council for transferring to and making exerciseable by the Board of Education certain powers of the Charity Commissioners" has been issued as a Parliamentary paper. So far as they relate to trusts for educational purposes, the powers, hitherto pertaining only to the Charity Commissioners, of (*a*) inquiring into charities; and (*b*) requiring accounts and statements to be rendered and answers to questions to be returned; and (*c*) requiring copies of and extracts from documents to be furnished; and (*d*) searching records; and (*e*) requiring the attendance of witnesses and the production of documents; and (*f*) examining witnesses on oath and administering oaths, may be exercised by the Board of Education concurrently with the Commissioners.

All powers conferred on the Charity Commissioners by any scheme under the Endowed Schools Acts, 1869 to 1899, and regulating an endowment held for educational purposes in Wales or Monmouth, are also transferred, as well as similar powers arising out of the Charitable Trusts Acts, 1853 to 1894. But the rights in connection with land or funds belonging to such endowments, the appointment and removal of trustees, are not to be transferred to the Board of Education unless the property of the endowment is administered by a governing body established for educational purposes. The order comes into operation on November 1st of this year.

Lord Northbrook, in laying the foundation-stone of the new secondary school at Bournemouth, which it is estimated will cost £8,000, called attention to the remarkable increase in the number of public secondary schools during the last ten years. As many as 391 new schools for the provision of intermediate education have been opened during this time, and 282 existing schools have been developed and improved. This work has cost nearly three-and-a-half million pounds. After all, there must be a considerable belief in secondary education throughout the country.

AT the last meeting of the General Medical Council a further report by the Education Committee on the question of raising the standard of the Preliminary Examination in General Education was received and entered on the minutes. The report shows that a substantial advance on the present regulations can be made by insisting on improvements in the character and stringency of the junior examinations which can be directly influenced by the Council. The same advance can be secured in the case of other examinations by requiring that candidates offering corresponding certificates shall obtain a higher standard than that of a simple pass.

IT should not be long before Lichfield Grammar School has new buildings. We learn from *The Athenæum* that - largely owing to the efforts of the Dean of Lichfield, the chairman of the Grammar School Governors—a fund of £7,000 has been fully subscribed for the purpose.

THE authorities of the Gilchrist Educational Trust have established, in commemoration of their late chairman, M. Leigh Holland, who was specially interested in the higher education of women, a fellowship of the value of £100 a year, to be held in alternate years by students of Girton and Newnham Colleges respectively. The holder of the fellowship must have been placed in the first class of one of the Cambridge triposes, and will be required to follow a course of preparation for the profession of medicine or teaching or such other professional pursuit as may be approved by the Trustees. The first award will be made by Girton College in July of this year.

THE results of the last annual examination in commercial subjects, conducted by the examinations board of the National Union of Teachers, show that increased attention is being given, in higher grade and other commercial schools, to subjects likely to be of direct practical value in commercial life. Book-keeping was the most popular subject with the 1,500 candidates examined, and arithmetic, French and shorthand were offered by most of them. German, we find, is seriously neglected, and the examiners complain of the way in which French has been taught to the candidates.

THE Sydney Chamber of Commerce has recently conducted its first Commercial Examination, and is issuing its own certificates for proficiency. Employers in New South Wales are as willing to give preference in employment to holders of the local Certificate of Proficiency as employers in the United Kingdom are desirous of securing the services of candidates holding the certificates issued by the London Chamber of Commerce.

THERE is again this year an increase in the number of candidates for the Oxford Local Examinations shortly to be held. The number of senior candidates has grown from 1,943 to 2,003, that of the juniors from 4,491 to 4,583, and of preliminary pupils from 3,275 to 3,502. The number of senior candidates offering the Old Testament subject has fallen from 1,370 last year to 384 this time, while 1,325 have this year entered for the examination in the Acts compared with 567 last July. Shakespeare is still taken by the majority of the candidates, but geography has fallen off, only 883 offering it as against 930 last year with a smaller total number of candidates. In the languages section, Latin, French and German are offered by about the same proportion, but higher Latin shows a decrease, as also does Greek. There is very little variation in the proportion of candidates offering the mathematical, natural science, and drawing subjects, but book-keeping and politics are both offered by a larger number of candidates.

THE Old Testament subject appears to have lost in popularity with the junior candidates also, as this year only 1,337 offer it as compared with 3,502 last year. In 1899 St. Mark was offered by 3,361, this year the corresponding subject, St. Luke, by 4,247. Acts I.-XVI. last year attracted only 976, this year it is offered by 2,828. Whilst Shakespeare still attracts the majority of the candidates, those taking Scott have increased this year from 157 to 417, but geography has slightly decreased. In languages, Latin, Greek, French and German are about the same. In drawing the most noticeable feature is the large increase in the number of those offering freehand and model, both of which subjects have been taken up by 500 more students. As in the other two classes, the Old Testament is only offered by 961 preliminary candidates as against 1,908 last year, the New Testament being preferred, although the figures for the latter cannot be compared, as this year both St. Luke and Acts can be offered, whilst last year there was only one New Testament subject. The other subjects are offered by about the same proportion of candidates as last year, with the exception of higher mathematics, which shows a decrease.

IN the West Riding of Yorkshire there is a prospect that a comprehensive scheme of co-ordination may soon be adopted. Important conferences have been held between representatives of the West Riding County Council and of the County Borough Councils in reference to sundry matters in which co-operation between the county and the county boroughs appears desirable, especially as regards the inspection of schools and classes, examinations, scholarship schemes, commercial education and the training of teachers. The whole subject has been referred for report to a committee consisting of representatives of the County Council and the five County Borough Councils.

OF the total number of Intermediate schools in Wales we learn, from the last number of *The Record of Technical and Secondary Education*, that 45 are dual schools and 7 are mixed schools, while there are 22 separate schools for boys and 21 for girls. The total number of pupils in attendance has risen to 7,390, showing an advance of nearly seven per cent. over the previous year; they are under the control of 72 headmasters and 23 headmistresses, and the number of boys exceeds that of girls by about five per cent. Some interesting deductions can be made regarding the sources of supply of pupils to intermediate schools. Rural districts provide as much as 37 per cent. of the pupils, leaving 63 per cent. to the urban districts. Considering the question of supply by the different types of schools, public elementary schools, of course, take the lead with 68 per cent., but higher-grade elementary and public secondary schools, with a combined percentage of eleven, are outstripped by private schools, which provide 17 per cent. of the total number of pupils; the remaining four per cent. may be attributed to private individual tuition.

A VERY satisfactory scheme for providing the miners of Staffordshire with technical education has been built up during the last eight years. Two mining lecturers are engaged, one for the north and one for the south coalfields of the county. At each of the centres where the instruction is given the course lasts for four years, beginning with the evening continuation school and finishing with the honours stage of the examination of the Department of Science and Art. Special courses of work are provided in mine surveying and subsidiary subjects, and scholarships are offered by which selected advanced pupils may attend a two or three years' course at a university college.

One of the most satisfactory characteristics of the work of the Manchester Technical School, and also of the Art School, is the extent to which the two schools are securing the support and meeting the needs of members of trades and industries. Of the students at the Technical School, 1,393 are drawn from the engineering and allied trades and 467 from the building trades, while chemical and dyeing, printing and paper, textile and other trades furnish at least 500 additional students. The School of Art finds a large proportion of its students from those connected with the teaching profession, but draughtsmen, designers and engravers and others make up about fifteen per cent. of the total number of pupils.

Mr. F. R. Armytage, Organising Secretary for Technical Instruction in Shropshire, has been collecting statistics with reference to the supply of secondary education in his county. The number of schools communicated with was 110, and twelve of the circulars issued were returned by the Post Office, the addressees having left the district. Six of the schools applied to had been recently closed, and two others intended to close shortly. Of the schools addressed ten were endowed schools for boys, two were proprietary schools, one for boys and one for girls, eighteen were private schools for boys, seventy-eight private schools for girls, and two were mixed schools. No replies were received from twenty-six schools, three being boys' schools and only one an endowed school. Dr. Armytage visited fifty-six schools personally, and received from fifty-three forms more or less completely filled up. Among the schools which have not furnished information are two of the largest schools for boys in the county, containing between them upwards of 200 boarders. The returns show that the fifty-three schools accommodate 941 boarders and 1,481 day scholars. Of these 865 are under twelve years of age, 1,184 are between twelve and sixteen years of age, and 350 are over sixteen years of age. With hardly an exception the teaching is tested by public examination, held either by the local examination delegacies of Oxford and Cambridge or by the College of Preceptors. Many of the girls' schools, in addition, prepared pupils for public examinations in music.

The National Home-Reading Union have long been engaged in a very useful work, and we are glad to notice that its value is recognised in the "Revised Instructions to Her Majesty's Inspectors." One of the consequences of free education has been to abolish home-reading lessons for the children in the standards of public elementary schools, since no school-books which are the property of the school are allowed to be taken home. But the difficulty can be got over by establishing a reading-circle class in connection with the National Home-Reading Union. In the reading circle class several books are used, and the scholars are allowed to take them home. The teacher of the circle class spends half the time of the class in teaching reading proper by first reading a paragraph aloud and then asking two, or at most three, members of the class to read the same paragraph, reproducing the emphasis and tone given by their teacher. The second half of the hour is devoted to giving explanations of allusions or difficult words to be found in the ten or twenty pages set to be read at home during the week. The teacher endeavours to create an interest in the portion to be read at home by elucidating the method of the writer, and by opening side-lights that will still further awaken the intelligence of the pupils. When the circle class next meets, it is easy to ascertain how far the pupils have read with intelligence and true enjoyment the portion set for their home-reading. In this way, children may be trained to read good books for their own enjoyment.

A blue-book which has just been issued contains the general report for the year 1899 of Mr. T. King, Her Majesty's senior chief inspector of schools, relating to the metropolitan division, which comprises the district of the School Board for London, the county of Middlesex, and parts of Essex and Hertfordshire, and covers a population of 5,429,168. Detailed educational reports by the inspectors and sub-inspectors are appended to Mr. King's report, and it is stated, among other things, that in all divisions of London an increase in the number of scholars above thirteen years of age has been recorded. In Southwark the increase of these scholars actually exceeds the decrease of scholars of the ordinary school age. In Finsbury, Hackney and East Lambeth the increase of scholars above thirteen amounts to half the loss of scholars under that age; in Marylebone it neutralises one-third of the heavy decrease in that district. The general decrease appears to be largest in Westminster, in Marylebone and in Finsbury, whilst in Greenwich, West Lambeth and Tower Hamlets large increases have been noted.

The pupil-teacher difficulty is not confined to England. In the last report of Dr. Stewart on the schools of the western division of Scotland, which has recently been published, we find several members of his staff referring to this question. Dr. Smith calls attention to the antagonism between the duties and interests of pupil-teachers. "Their interests, as represented by their chances of obtaining an entrance into the training-colleges, require that they be instructed in a more thorough way than of old. This has necessitated in many cases the institution of pupil-teachers' classes in the central schools of the parish. Many of those taught at such classes have obtained high leaving-certificates; but their success has been obtained at the cost of their duties in their own schools. Headmasters have frequently informed me that on some days of the week they have no pupil-teachers, and on others they have only two or three. No school can be conducted satisfactorily under such conditions." Similarly, Mr. Harvey reports that pupil-teachers are less in evidence now than formerly. There are fewer of them, and the restrictions on their hours of teaching make them of less importance on the school staff.

Official reports on education are often regarded by teachers as very uninteresting reading. However this may be, there is certainly a wealth of information as to the value of different methods of teaching to be gained from them, and many useful hints to be gleaned as to the points to be emphasised in teaching various subjects. This can be illustrated by one out of many possible examples, by the remarks on the teaching of grammar which are to be found scattered through Dr. Stewart's last report on the schools of western Scotland. One of the inspectors urges the value in intellectual training of the ability to pick out the clauses in a sentence of average complexity and to explain their relation, and goes on to say a good word for the much maligned text-book—"where grammar is taught without recourse to a text-book the instruction is generally of a very flimsy nature." Another inspector writes:—"A good deal has been written in past years about needless refinements in the teaching of grammar. There is not much ground now for such a complaint. To separate a simple sentence into its essential component parts, to break a complex sentence into its clauses, can hardly be called excess of subtlety. This is generally all that is now attempted in grammatical analysis." And a third on the same subject declares "that no scholar can acquire a thorough mastery of any subject without formal and possibly tedious drill in the theory of the subject." There is too great a disposition in schools now-a-days to make things as easy as possible.

We cannot refrain from printing Dr. Stewart's remarks on the difficulties in the way of giving lessons on Nature Knowledge. It is from his report on the schools of southern Scotland.

"In the irony of fate we find many enthusiastic teachers in towns, where the dismally depressing streets or the chronic fog hides even the sky from view, where, except on the occasion of a day's trip to the country, the great mass of the children cannot make the acquaintance of bird, or beast, or tree, nor of the wonders of the seashore. The birds and beasts are either stuffed or in cages, and the trees are in books. In the country, again, the materials are ample. The sights, sounds, and beauties of nature are there, and are revelled in by the stranger; but they are, curiously enough, unseen, unheard, and unappreciated by those who are familiar with them all. Hence the teacher, unless he is an enthusiast, finds no response when he attempts to awaken the interest of unsympathetic pupils in a subject not particularly to his or their taste. While these remarks may savour of hopelessness or pessimism as far as this most valuable department of study is concerned, it is not necessary to lose faith in it for a moment. Even in the most dismal surroundings something may be done to induce children to use their eyes and ears in the observation of natural objects and phenomena."

PROFESSOR H. W. WITHERS contributes to *The Contemporary Review*, for June, an article on "New Authorities in English Education." He tells us the "old, old story" of English deficiencies and the want of the "idea of science and systematic knowledge" of which Matthew Arnold wrote in 1868, and to which the Earl of Rosebery has recently called attention. It is extraordinary what an amount of reiteration is necessary before the ordinary man of affairs can be got to understand what has been painfully evident for many years past to the student of pedagogics. It would seem that Professor Wither's article has been awaiting publication for some months, as it contains no mention of the minute establishing higher elementary schools nor of the now widely-famed "block grant." All the same, it is an article to be read by every enthusiastic educationist.

A HISTORY of Bradfield College, by old Bradfield Boys, edited by Mr. A. F. Leach, will be published shortly by Mr. Henry Frowde, Oxford University Press. The book will be a handsome volume, and contain many illustrations. Mr. Leach is already known as a historian of Winchester College, and author of "English Schools at the Reformation."

IN an article on "Education in the United States," in the May number of the *New York Educational Review*, Professor Nicholas Butler says that the number of public secondary schools in the United States in 1897-98 was 5,315, employing 17,941 teachers and enrolling 449,600 pupils. Nearly 3,000 of these schools were in the North Central States. . . . . The present rate of increase of secondary-school pupils is nearly five times as great as the rate of increase of the population. It is noteworthy that nearly fifty per cent. of the whole number of secondary-school pupils are studying Latin. The rate of increase in the number of the pupils who study Latin is fully twice as great as the rate of increase in the number of secondary-school students. Between 1890 and 1896, while the number of students in private secondary schools increased twelve per cent., the number of students in public secondary schools increased eighty-seven per cent. Since 1894 the number of pupils in private schools has steadily decreased.

IN an article of an original kind, in the June number of the *New York Educational Review*, Professor Andrew Draper, of the University of Illinois, discusses the questions of "getting teachers and getting positions." Several points of direct personal interest to teachers are raised. After stating what he considers the legitimate function of the scholastic agent, and describing the peculiar temptations to which this type of business man is subjected, the author gives it as his opinion that the agent who can pursue the business a long time, "deal justly by the different interests he undertakes to serve, and keep his self-respect, is entitled to free transportation to heaven and to be assured that no annoying questions will be put to him at the gate."

PROFESSOR DRAPER is no believer in testimonials. The best plan to adopt is, he thinks, for headmasters and others to act as references willing to answer questions fully and honestly about the qualifications and experience of the applicant who desires their aid. To quote the article:—"Credentials are strong on generalities and weak on particularities. They make much of the passive virtues, and say little or nothing about the shortcomings or the faults. Perhaps they are generally harmless; possibly no one pays serious attention to them. . . . They discredit the writers. It may be surmised also that they really weaken the candidates by giving them false estimates of themselves."

SCOTTISH.

IN order to prevent any misapprehension or confusion on the day of examination, the Scotch Education Department have issued the following information in regard to the new composition test in Modern Languages at the Leaving Certificate Examinations. (1) The test is not intended to supersede former tests. (2) The test will be the same for all candidates whatsoever the grade in which they are presented. (3) If desired, it may be read out to the candidates by one of the teachers in presence of the supervising officer. (4) The time allowed for the Modern Language papers will be the same as in previous years, but the fact that an additional test is required has been borne in mind in setting them.

THE monthly meeting of the Modern Language Association took place at Dundee. In an address on "Cosmopolitanism," Prof. D'Arcy Thompson said that a greater effort should be made to break through the prevailing habit of teaching living languages as dead languages were taught. To a greater extent the grammar and exercise-book might be discarded and the study carried on on conversational lines. It was agreed to give a general support to the Higher Education Bill, and to give special support to the proposal that a considerable proportion of the Higher Education Committee should be nominated by the central authority on account of their special fitness to administer secondary education.

A MEETING of the General Committee of the Association of Secondary Teachers was held in Edinburgh, when the new Education Bill was under discussion. The following resolutions were unanimously agreed to:—(1) The Committee desire to express their cordial approval of the Bill, consolidating, as it does, all the funds for secondary education. (2) That a considerable proportion of the members of the Higher Education Committees should be appointed on account of their special fitness for administering higher education, even if such an arrangement should involve a surrender of local rating power. (3) That the teaching profession should be represented on the Higher Education Committees. (4) That special inspectors with practical experience in secondary teaching should be appointed under the Bill for the inspection of higher education. (5) That retiring allowances may be granted by the Higher Education Committees in those cases where such powers do not already exist.

LORD BALFOUR'S Education Bill has passed through all the stages in the House of Lords. The general scope of the measure is not materially affected, and the changes that have been introduced should greatly expedite its passage through the House of Commons. The most important changes are:

(1) Rating may be dispensed with if the local authorities so determine, and in any case the rate must not exceed one penny in the pound. (2) The alternative to rating is the appropriation of public grants at present available for other purposes. (3) Greater power of initiation on several vital points have been given to the Higher Education Committees.

LORD BALFOUR exhibited admirable tact in steering his Bill through the House of Lords. By a skilful admixture of well-timed concession and uncompromising firmness he has got his Bill through without material alteration. The acceptance of the penny-in-the-pound limit of local rate sacrificed nothing, as that limit is not likely to be exceeded for many years to come; while the policy of leaving the question of raising a local rate to the option of the various districts is one that cannot well be objected to by the Opposition. It is probable that these changes will greatly lessen the criticism in the House of Commons, and that the battle there will wage round the proposals affecting elementary education. In the interests of higher education it might be well to lighten the ship by throwing overboard these contentious clauses.

IRISH.

AT their Annual Conference, held early in June, the General Assembly of the Presbyterian body passed some resolutions, which were introduced by Dr. McCheyne Edgar, embodying their views on the Irish University question. They strongly disapprove of Mr. Balfour's scheme of founding two new universities, more or less sectarian, one for Roman Catholics and one for Presbyterians. They propose instead that Trinity College shall be "nationalised," by forming within it theological schools for every denomination, and colleges "up and down the country" affiliated to it. Nothing is said as to representation on the governing body. The scheme met with a good deal of opposition in the Assembly as being impracticable, but it was passed. It has since been criticised as a scheme that would not satisfy the Catholic bishops, while it would be strongly opposed by Trinity College. It would transform that institution, and would rob it of its peculiar character and value as a teaching university.

THE Central Association of Irish Schoolmistresses, in conjunction with Alexandra College, are about to organise for the coming autumn a course of special lectures and training for the examinations and diplomas for teachers established by Trinity College. This is the first attempt to give training to secondary teachers in Ireland. It is proposed to invite a lecturer from England to give lectures and demonstrations in education, and also to have teaching in psychology and method. The first examinations take place early in January, 1901.

THE science courses for teachers at the Royal College of Science, Stephen's Green, which were so successful last year, will be held again this year during July. The subjects this year will be Chemistry, Physics, and Botany, and the courses begin on the 4th inst. and last for three weeks.

DURING the past month the Intermediate examinations and the various examinations in the Arts courses of the Royal University were held in Dublin and in country centres. Both began on June 11th, the Intermediate examinations lasting a fortnight, and those of the Royal University nearly a month.

THE Rules and Programme for the Intermediate Examinations of 1901 will be issued at once, and no changes will be introduced in them, as the required new Act has not yet been passed.

THE new Irish Department of Agriculture and Industries may now be said to be fairly started. The first general meeting of the Council has been held with much success and unanimity, and the elections to the various Boards and Councils have taken place. Men of every kind of political and religious opinion and social position have met in these, many of them men of ability and experience in practical affairs, and there is every hope that the Department will do extremely useful work.

CURRENT HISTORY.

THE "Orange Free State" has ceased to exist. Henceforward the territory formerly so called is to be known as the "Orange River Colony." We have "annexed" one of our enemies, and we are probably about to "annex" the other. "Conquest" and "annexation" in this sense have been rare in modern European warfare. Napoleon, of course, did such things wholesale, and with a cynical disregard of international law and morality. But then he was the last inheritor of the debased diplomacy of the eighteenth century, when such things as Partitions of Poland were possible. It is also true that the "Reformation" to many a German prince often meant "secularisation" of the territory of bishops and monasteries, which was intermingled with his own. But besides these two periods of revolution, European nations have, even in their time of greatest victory, been content with weakening, not destroying, their beaten enemy. It is obvious that the justification for our South African policy must be one based on the peculiar circumstances of the case.

A PROPOSAL has been tentatively put forward recently that degrees at our ancient universities should have a further condition attached, viz., that the candidate should have been a "volunteer." It is, of course, only a tentative suggestion, and may not come to anything, but it is interesting as a sign of our present military fervour. The proposer quotes a school where membership of the volunteer corps is an antecedent necessary qualification for membership of the cricket or football team. Clearly the word "volunteer" is undergoing a change in meaning. "There's no compulsion, only you must." The mediæval Englishman knew no such squeamishness. "Anglo-Saxon" custom and Norman "feudal" law combined to make military service compulsory on every freeman, and in the thirteenth and fourteenth centuries "commissions of array" united the two in the way that is so splendidly caricatured in Shakespeare by the description of Falstaff's "ragged regiment." Down to the beginning of this century the pressgang was used to supply the Navy, though impressment for the Army was not found necessary.

CHINA is still an unknown land, and, therefore, whatever can be said with reference to movements in that country is subject to the penalty that awaits all talk about "dark" ages. But the revolt of the "Boxers," as Europeans in the east have called the "Righteous Harmony Fists," seems important and formidable. It may lead to great changes even before we get into print. It seems to be a national revolt against all foreign influence, whether that intrusion take the form of Christian missions, gunboats or fortresses. The resources of modern civilisation are much greater now than a hundred years ago. Otherwise we should feel inclined to point to Spain's revolt against Napoleon, to Joan of Arc, or to the movements of 1830 and 1848 as a warning to our statesmen to beware how they handle a nation so unknown as the Chinese. After all, the world has as yet been moved largely by the passions of men, and patriotism is one of those passions which has worked most unexpectedly and yet most powerfully.

LONDON is getting too big. It is getting "overcrowded with aliens from Russia and Poland;" "construction of new workshops within the central area of the metropolis should be prohibited;" "industrial works should be removed from London into the country;" "unoccupied ground ought to be preserved as breathing spaces;" "new methods of traction will enable men to get to their work from a distance without difficulty;" "great highways for motor traffic may be constructed." The quotations are from a recent Parliamentary debate. How they remind us of seventeenth century ideas on the same subject! Then, too, London was getting too big. It was dangerous in four ways. Politically it was apt to influence Parliament out of proportion to its size. Municipally it was becoming unmanageable. In sanitary matters much was to be desired, and it looked as if it would be difficult to feed the people if they became more numerous. So many Acts were passed to check the growth of the capital, but all in vain. Our mechanical powers have improved, otherwise have we gained wisdom?

EDUCATIONAL AIMS AND METHODS.[1]

"IN forming our ideal of the function of a school, we cannot afford to overlook the border-land which separates its corporate life from the larger life of the family and the community, nor the light which is shed on educational problems by history, by social and industrial necessities, by religious controversies and by political events." So writes Sir Joshua Fitch in his preface, and it is perhaps the most noteworthy characteristic of this valuable book that it reveals throughout the open mind which is ever on the alert to benefit by the experience of workers in all departments of thought. Every teacher should read these lectures; but, somehow, schoolmasters are too often quite uninterested in education and rarely choose to read in their leisure hours anything which suggests the class-room even remotely. But even those who are indifferent to educational methods other than their own should make an exception in this case, for they would then be surprised to find how interesting educational topics can be. Nobody knows better than Sir Joshua how to present his thesis in an attractive manner.

The lectures, which have all been delivered during the last two or three years, some in this country and some in America, can be conveniently grouped under the heads of educational methods, the history of education, and its administration, and it would be difficult to say which are best where all are so good. The author's large experience, wide reading, and sympathetic treatment of others' work, are being continually impressed upon the reader as he passes from page to page.

The lecture on "Methods of Instruction as illustrated in the Bible," which was delivered at Cambridge, is a good example of how Sir Joshua Fitch can manage to obtain help in elucidating pedagogic principles from all sorts of sources. Others have, of course, occasionally referred to biblical methods of instruction, but we do not remember having read elsewhere so systematic and thorough a treatment of the question. The teacher who studies this lecture will have an excellent object lesson in how to utilise in the difficult business of education all that he has previously studied. The same power of pressing principles recognised in other departments of knowledge into service is to be found in the lecture on "The Evolution of Character," in which the generalisations formulated by Charles Darwin are applied to education. It might be possible, perhaps, to indicate some respects in which the author has not followed the most recent findings of eminent evolutionists, but intended as the lecture was to indicate to acting teachers how the methods and conclusions of men of science can be made use of in the work of the school, it is a very successful piece of writing.

We heartily agree with the sentiment with which another lecture is concluded. Every man and woman who undertakes to teach should remember "that education is a progressive science, at present in a very early stage of development. Hence it is the duty of all the practitioners of that science to be well aware of its incompleteness, and to do something to enlarge its boundaries and enrich it with new discoveries. Every school is a laboratory, in which new experiments may be tried and new truths may be brought to light. And every teacher who invents a new method or finds a new channel of access to the intelligence, the conscience and sympathy of his scholars will do a service not only to his professional brethren and successors, but to the whole community."

Nothing would more surely abolish the feeling that teaching is drudgery than the clear realisation of the possibility there is of every teacher advancing our knowledge of the workings of young minds and of improving upon the methods of instruction in vogue.

Of lectures upon different periods in the history of education there are several, among which those on "Ascham and the Schools of the Renaissance," "Edward Thring," "Joseph Lancaster," and the all too short one on "Pestalozzi," may be mentioned; while some administrative questions in connection with education are dealt with in lectures such as those on "Endowments and their Influence on Education," "The French Leaving Certificate," and others.

It is impossible to refer to the subject matter of each lecture, and unnecessary to reprint more of the many passages we have marked in reading the book. But it is earnestly to be hoped that the volume will be widely read and its subjects seriously considered.

A NEW HANDBOOK TO RUGBY SCHOOL.[1]

EIGHTY-TWO of Mr. Bradby's pages are devoted to the history of the great school with which he is associated, and, of course, within so small a space it has been impossible to give, with any completeness, the records which are contained in several other volumes dealing with Rugby school and its doings. It would have been much better to substitute an outline only, in the same way as Mr. Tod has done in his "Charterhouse," the first book of this series, which we reviewed last month. There would then have been room for more information concerning such subjects as school-life, expenses, and so on, which added so much to the interest of Mr. Tod's volume.

Mr. Bradby writes in a pleasing style, and his account of the great midland school will prove very useful to parents who think of sending boys there. His account of the school buildings and grounds will serve as a useful guide to visitors, and will afford old Rugbeians an opportunity of learning of the recent improvements to the place where they were educated.

In reading of the holidays on pp. 166-7, we could not help instituting a comparison between affairs at Rugby to-day and what Sir Joshua Fitch tells us in one of his lectures about the work and holidays usual in certain schools during the sixteenth century. At Rugby there are three regular half-holidays a week, while every third Monday is also a half-holiday. Half-holidays are also not infrequently given on fine Mondays, in recognition of scholarships or special events. "The summer holidays are eight weeks long (a special feature of the school which all Rugbeians remember with deep satisfaction). Eight weeks are distributed between Christmas and Easter." Compare this lavish allowance with the provisions ordained by the statutes of Sandwich school. "Neither the master nor usher, without license of the governors, shall absent himself above twenty days in the year from the school, nor so much but upon good and urgent cause, and in the vacant time the one to supply the other's office upon some good, convenient allowance as they can agree, so as both at once may not, in any wise, be absent from the said school."

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[1] "Educational Aims and Methods." Lectures and Addresses. By Sir Joshua Fitch, M.A., LL.D. xii.+448 pp. (Cambridge University Press.) 5s.

[1] "Rugby." By H. C. Bradby, B.A. xii.+275 pp. (Geo. Bell & Sons.) 3s. 6d. net.

The account of the Natural History Society, with between 350 and 400 members and associates, shows how important a part the study of natural history may take in public school education. The society was started in 1867 by Mr. F. E. Kitchener, who was then an assistant-master of Rugby, but the museum had previously been arranged by Mr. J. M. (now Archdeacon) Wilson, when he was a member of the staff. But the Debating Society is much older than its sister association, dating, as it does, from 1833, and is, it would appear from Mr. Bradby's description, almost as popular. The volume, like its predecessor, is beautifully illustrated, and will, we expect, long be a favourite among the handbooks to Rugby.

THE REV. H. A. JAMES, D.D.
Headmaster of Rugby School.
(*From a photograph by Mr. J. Hensman, Rugby.*)

The Civilisation of India. By Romesh C. Dutt. 146 pp. (Dent: Temple Primers.)—There are probably not a dozen men in England who could criticise this book. We, therefore, content ourselves with saying that it is a most readable account of the life and thought of India from the earliest ages till modern times, untouched by contact with Europe. No better little book, we conceive, could be put into the hands of missionaries or others whose business it is to know the thoughts of our fellow-subjects and others in the Indian peninsula. Our readers will find it profitable for their own reading. It will supply a background for the doings of Clive and Warren Hastings.

RECENT SCHOOL BOOKS.

Classics.

Aristophanes. Peace. By W. W. Merry. D.D. 79 + 90 pp. (Oxford Press.) 3*s.* 6*d.*—It is needless to say that this edition is marked by the best scholarship. The Rector of Lincoln discusses everything of importance with a wealth of illustration, and also does full justice to the real fun of the comedy. We cordially commend the book on all accounts.

The Greek Drama. By Lionel D. Barnett, M.A. 114 pp. (Dent.) 1*s.* net.—The author of this neat little book is frankly dogmatic, and defends his dogmatism, on many vexed questions, and although some will not agree with many of his positions, yet, in spite of his disclaimer of any "spark of originality," he has produced a very handy and extremely useful introduction to the study of the drama of Greece from the earliest times to the 4th century B.C. An appendix contains a review of Roman drama, the child of the Greek.

Horace The Satires. By B. J. Hayes, M.A., and F. G. Plaistowe, M.A. 166 pp. (Clive.) 4*s.* 6*d.* *Translation.* By the same. 61 pp. 1*s.* 6*d.*—The price of the "Text and Notes" is rather high, but the book contains all that will enable a student reading by himself to reach the standard of the examination for which it is issued—the London Intermediate Arts next year. A good deal of useful information is contained in the Introduction of sixteen pages, and there are eighty-three pages of notes followed by a dictionary of proper names. The translation is accurate and lively.

Cicero. In Catilinam I-IV. By H. W. Auden, M.A. xxxiii + 109 pp. (Blackwood.) 1*s.* 6*d.* This edition of the Catilinarian speeches should have a ready sale. Editor and publisher have combined to produce an exceedingly good and, withal, cheap book. The illustrations are very far above most of those now so commonly found in school classics. The notes are commendably short, and contain all that a schoolboy of average intelligence will need for the proper understanding of the author. There are, besides, useful introductions and appendices, not least valuable among which is a collection of passages for Latin prose taken from English authors and orators for which these speeches supply models.

Corpus Poetarum Latinorum. Part III. Edited by J. P. Postgate. xi. + 195 pp. (Bell.) Paper, 9*s.* net.—Professor Postgate apologises, in a preface addressed *ad lectorem benevolum*, for the delay in producing this first part of the second volume of the collected writings of Latin poets. The works here presented are those of *Grattius*, prepared by the editor; *Manilius*, by U. Bechert; *Phaedrus*, by J. Gow; *Persius*, by W. C. Summers; *Lucan*, by W. E. Heitland; the fragments of *Lucan*, by the editor; *Valerius Flaccus*, by J. B. Bury; while Robinson Ellis is responsible for *Aetna* of unknown authorship. It would be entirely superfluous to enter into a comparison between the contents of this book and those of the two former collections of Walker and Weber, seeing that Parts I. and II. have been for some time in the hands of every scholar. It may be said at once that this Part is on the same high level as its predecessors, upon which were lavished all the pains of mature scholarship and exact accuracy. We note the names of new workers in this series, and they are all those of masters. In text, orthography and the conspectus of *variæ lectiones* alike the utmost care has been expended, and the result is an absolutely indispensable standard edition of the authors contained. Everyone interested in Latin literature will join in hoping that the fourth and last part may be speedily placed at his service.

From Messrs. Bell we have received translations of *Livy XXI., XXII.* and *XXIII.*, by J. B. Baker, M.A., and of *Thucydides VII.*, by E. C. Marchant, M.A., which are as good as the former translations by those authors which we have noticed. The same firm also send three new volumes in their "Illustrated Classics," viz.: *Selections from Vergil, Aeneid VII-XII.*, by W. G. Coast, B.A., which will serve admirably as an introduction to that author in junior forms; *Ovid, Tristia III.*, by H. R. Woolrych, M.A., which contains some of the best pictures we have seen in this series; and *Caesar V.*, by A. Reynolds, M.A., which has representations of the Ancient Britons and their arms, ornaments, &c. The series fully maintains its usefulness.

Grammar and Composition.

A First Manual of Composition. By E. H. Lewis, Ph.D. xxvi. + 234 pp. (The Macmillan Co., New York and London.) 3s. 6d. - When the form-master is at a loss to know with what particular variety of "English" to occupy his pupils for a period, he is generally persuaded by a still, small and insidious voice to "set them an essay," *i.e.*, to announce the title, and then sit down at his desk and meditate on many things. It is no exaggeration to say that at least sixty per cent. of the boys in our secondary schools are never taught how to write an essay. We are, however, at last beginning to realise that essay writing is one of the most important branches of education. That the best books on the subject are by American writers is at once a tribute to the superiority of our cousins in this matter and to our absurd apathy.

The book before us is, we have no hesitation in saying, the best we have seen for pupils of the ages of 13, 14 and 15. We should like to use it daily in our own classes—presumably essay writing is a daily occurrence in American schools,—but, of course, the thing is impossible. There are 170 short exercises, very carefully graded in all respects; the revision of past essays is reduced to a science (they are generally torn up in England), and this forms a fundamental part of Dr. Lewis's system. Drill is given in reasoning; spontaneity is ensured by several efficient devices, and the exercises are all calculated to appeal to the writer's interest. The consequence is that a boy who has used the methods described in this book will find no difficulty in expressing his thoughts in an intelligent and pleasing manner. We subjoin one or two exercises that will indicate the systematic treatment of the subject:—"How to use *and* reasonably;" "to understand what is meant by reasoning from general to particular;" "what order to follow in historical narratives;" "to write a personal letter."

Essays and Essay Writing for Public Examinations. By A. W. Ready, B.A. 146 pp. (Bell & Sons.) - This book is suitable for rather more advanced pupils than those for whom Dr. Lewis's is intended. Part I. contains rules and directions; Part II. consists of twelve complete essays, preceded by an analysis and sketch of each, and followed by notes and explanation; Part III. has sections on Figures of Speech, Style, &c. The author claims to have used the "analysis and sketch" method with great success in the case of Army and other pupils. We like the essays very much, and they will be found useful as models.

History.

English History during the Tudor Period. 169 pp. (Bell's History Readers.)—Good of its kind, but, like so many other such books, scattered with blunders, made sometimes for want of common knowledge, sometimes for want of reading the latest information in historical study. Thus we still have "Morton's Fork," "Maximilian Emperor of Germany," "Charles V. of Spain," "Martin Luther a monk," Elizabeth "Head of the Church," James I. King of "the United Kingdom of Great Britain and Ireland." We are told that Henry VIII. "left the crown . . . by will, as if it were his own private property," that Edward VI. "founded several Grammar Schools," that the ultra-reformers of Elizabeth's time "took the name of Puritans" and "formed themselves into a separate body." These ought by now to have disappeared from our text books.

Topics on Greek and Roman History. By Arthur L. Goodrich. x. + 53 + viii. + 98 pp. (Macmillan.)—This volume really consists of two distinct but similar books bound in one; the smaller part deals with Greek history (to 146 B.C.), the latter part with Roman history (to 476 A.D.). Each part consists of explanations, a book list, and topical references ranged under three main headings—Physical Features, Sub-Periods and Geographical Review (consisting of place names sorted out into natural groups, each arranged in alphabetical order). Brief lists of historical fiction (prose and verse) and an index are given at the end of each part. There are many misprints in proper names and initials, and we have noticed one or two curious omissions, *e.g.*, Mr. Wells's "Roman History," Mr. Hill's "Sources of Greek History," and Prof. Seeley's "Livy, Book I." But they do not seriously detract from the very high value of the book as a sound and handy guide to the "heuristic" study of Ancient History. Mr. Goodrich's manual is, in fact, marked by the helpfulness in conception and thoughtfulness in execution which generally characterise the American bibliographist, and it should be in the hands of every student and teacher of the subject.

A Short History of the United States for School Use. By Prof. Edward Channing. xvii. + 401 + xviii. pp. (New York: the Macmillan Company.) 6s.—An excellent book, provided with beautifully clear maps, besides other illustrations, as well as hints to teachers appended to each chapter, and containing as appendix the full text of the constitution. We take the opportunity of pointing three morals: (*a*) Teachers in American schools are assumed to be women. The author says, "The teacher is recommended to study sources in preparing *her* work." (*b*) Constitutional history preponderates, as it must needs do, in this book. And some of it is not especially easy to make clear to children. Yet it is attempted in the United States, and apparently with some amount of success. (*c*) There is not the slightest mention, or even hint, of ecclesiastical matters. The ignorant but intelligent foreigner would gather from this text book that religion did not exist in the U.S.A. Whether this is a blemish or not, is merely a matter of opinion, but it is a striking testimony to the effect of the non-existence of an established church.

Mathematics.

The Metric System. By L. Delbos, M.A. viii. + 136 pp. (Methuen & Co.) 2s.—This is by far the best book about the metric system that we remember having seen. The account given is very clear and simple, and there are some useful pages on working with decimals. Above all, the exercises are of the proper type, and not mere useless questions in conversion. Conversion tables are given; these are at present necessary, but the general adoption of the metric system would make them practically obsolete. The chapter on the advantages of the metric system ought to be conclusive to anyone not hopelessly prejudiced; we may quote one instructive paragraph:—"My conviction is, and it is based on inquiry, that they" (English men of business) "probably lose more business through their weights and measures than through their inability to speak foreign languages, and for the simple reason that while many foreigners can speak English, few are familiar with the methods of English reckoning. In some cases it has been said to me that English invoices are so incomprehensible that they must be accepted without the least inspection—a method of doing business which certainly is not satisfactory, and which must often drive foreigners to transfer their orders to other markets. In a foreign firm doing a good deal of business with England, I know for certain that a special staff has to be kept on purpose to examine English invoices and accounts. It is probable that the extra expense thus entailed will last only as long as the goods must be procured in England. The day the goods can be obtained elsewhere the English firms will be given up."

A First Geometry Book. By J. G. Hamilton, B.A., and F. Kettle, B.A. iv. + 92 pp. (E. Arnold.) 1s. This useful little book is written by experienced teachers, and proceeds upon the right lines. With its help an intelligent teacher will be able to arouse a spirit of observation and inquiry, and at the same time to teach the elements of geometrical measurement and construction, the elementary properties of lines, angles, triangles and parallelograms, and the rudiments of practical solid geometry. The directions for making cardboard models and other simple apparatus deserve to be mentioned with approval. The appearance of books of this kind is a very hopeful sign of improvement in the teaching of elementary geometry.

Miscellaneous.

The New Code, 1900. The N.U.T. edition. By J. H. Yoxall and T. A. Organ. xxxvi. + 312 pp. (Educational Supply Association.) 1s. *net*. *The Code for Day Schools*, 1900-1901. The "School Board Chronicle" edition. Edited by Herbert Cornish. lxvii. + 394 pp. (Grant.) 1s.—Every person who is connected with a public elementary school, whether as teacher or manager, should possess a copy of one of these books. The editors of the edition issued by the National Union of Teachers are experts familiar with every phase of the subjects with which they deal, and it would be impossible to find more competent guides through the intricacies of the regulations, schedules, appendices which make up the "Code." Mr. Cornish's edition is, however, the more pleasant to hand and eye, its general appearance and its type being much better. It contains, too, in addition to the subject matter of the "Code" itself, copies of documents and decisions of the Board of Education which serve to a great extent as the interpretation of the official text.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in The School World *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Arithmetic in Rural Schools.

It is common talk among those who are labouring to rouse the young people of our villages to the need of further, and especially technical education, that when they do join a class requiring any previous training, they are found to have forgotten so much of what they learnt at school that precious time has to be wasted in most elementary work before the higher stage can be attempted. Even the quality of the three "R.'s" has evaporated in an incredible manner, if the circumstances of life have not necessitated their being kept up.

And this is especially true of one of them, the arithmetic as now taught in our rural schools. Evening classes for adults are held, for instance, in commercial arithmetic, and in nine cases out of ten the inspector complains that ordinary standard arithmetic is being taught. And why? Because the class have forgotten what they learnt when they were children, and cannot go on to practical applications.

This fact is brought prominently before those who are examining either young men for agricultural or young women for dairy scholarships, to see if they are sufficiently educated to be able to receive instruction. In some cases in my own experience, and that of not the least eligible candidates in other respects, all idea of figures has gone. In the Tichborne case it counted much against the claimant that, though he protested that he had learnt Hebrew at Oscott, he did not know on which side of the page the lines began in a Hebrew Bible. And yet what seems more impossible, young persons of twenty have been known to have forgotten utterly at which end a simple multiplication sum is begun. Much more have they forgotten, if they ever knew, how to apply arithmetic to the commonest transactions of an agriculturist's daily life.

And why is teaching, good of its kind, to be all wasted? The object of this letter is to show that the teaching is not made sufficiently practical by continual application to the rural surroundings to induce boys and girls to apply what they have been taught, and so in a short time they forget it. The applications in the higher standards of the Day Code are foreign to their daily life, and the inventive faculty is not sufficiently cultivated by which the methods used in school can be seen to be available for daily needs.

Moreover, the applications that are taught are not likely to be of much use in after life. A boy or girl who is to live on a farm is more likely to have to do with buying and selling and measuring than with receiving dividends on stocks. Nor is the farm labourer, who is wise enough to seek to repair at his village continuation school the idleness of his school days, likely to care much for the schedule of commercial arithmetic, the only arithmetic the Board of Education suggests for every scholar. Far from his bucolic mind are the cross tots and metric systems of the elementary stage, still more the mysteries of company finance and the logarithmic calculation of annuities that await him in the more advanced stages.

When the huge number of rural elementary schools, and the large and increasing number of rural continuation schools are taken into account, is it too much to ask that the probable future destination of the children should be taken into account from the first throughout the standards, and carried on into a well thought out two years' course of arithmetic as applied to agricultural and rural life arranged for the evening schools?

In some counties a modified course of this sort for every continuation school assisted by County Technical Committees has, at the instance of those bodies, received the approval of Her Majesty's Inspectors for their districts, but there is no reason why the matter should not be dealt with for the country generally.

The alternative scheme now allowed in the Day School Education Code appears to suggest a very good foundation for what is here advocated. In the "B" scheme, the leading idea is to bring the difficulties of calculation gradually before the children by limiting the complication of the sums set in the lower standard. At the same time, the introduction to money and the concrete is to begin in the first standard, and this principle rules the succeeding stages. This affords an opportunity for exactly what we are advocating. Let the complexity of calculation be sacrificed to the practice of application taught continuously from the very first. Let the children deal with buying and selling, even if they are limited to numbers of pence below ten; let them finger boxes of imitation coins; let them measure for themselves with a foot-rule lengths, even if the inches are similarly limited. And so in the ascending scale, let the mensuration taught contemplate the future joiner, let the decimals deal from the first with the composition of milk or manures.

It has been necessary to go into detail, but the broad proposition remains. Hitherto all schools have been made to lie on a Procrustean bed invented by an arithmetical tyrant. Let the work vary with the atmosphere in which the students live, let them begin from the first to regard arithmetic as another mode of speech, and not only will the mental exercise be of much more educational value, but it will be impossible for those who have once learnt to forget how to apply it to the questions that arise in every-day life.

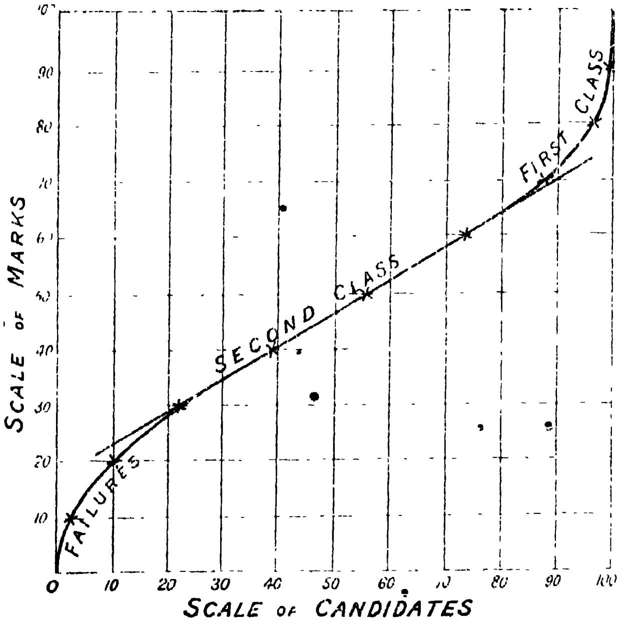
F. E. KITCHENER.

Stone, Staffs.
June 5th, 1900.

The Graphic Representation of Marks.

MR. H. W. ATKINSON's article on "Marks and Markings," in the June number of THE SCHOOL WORLD, is a noteworthy contribution to a subject which has not been given the attention it deserves. In small classes, and when the teacher knows the individual pupils, it is, perhaps, not essential to have any hard and fast system of marking, but in the examination of a large number of papers a definite and uniform method must be adopted, or there is a chance that, in some cases, the sheep will be mixed with the goats.

I have just concluded the examination of 1,000 papers, and as the method used by me to show graphically the relation between the marks gained and the number of candidates may be of interest to others, I venture to bring it before your notice. The method was described some years ago in *Nature*, by Prof. Lloyd Morgan, and I have found that it affords a very valuable means of showing the proportion of duffers, geniuses and mediocrities in any written examination in which numerical marks are assigned to the questions.



The accompanying curve was constructed in this way:—After marking my 1,000 papers, I wrote down the numerals from 0 to 100 upon a sheet of paper; then I rapidly went through the marks, and for every paper a stroke was made against the numeral corresponding with the number of marks obtained. I was thus able to see at the end how many candidates obtained any particular number of marks, and by arranging marks into groups of ten, it was easy to find the number of candidates who obtained marks from 0-10, 11-20, 21-30, and so on up to 100. The results are shown in Table I.:—

TABLE I.

Marks.	Number of Candidates.
0-10	26
11-20	70
21-30	118
31-40	183
41-50	154
51-60	176
61-70	140
71-80	80
81-90	37
91-100	10
	Total 1,000

TABLE II.

Marks.	Percentage of Candidates.
0-10	2·6
0-20	9·6
0-30	21·4
0-40	39·7
0-50	55·1
0-60	72·7
0-70	87·3
0-80	95·3
0-90	99·0
0-100	100·0

These numbers were reduced to percentages by inserting a decimal point; then by adding the first two groups, the first three groups, the first four groups, and so on to the whole ten groups, Table II. was produced.

From Table II. a curve can be constructed by setting down a scale of marks and a percentage scale of candidates upon squared paper, as here indicated, and plotting the corresponding numbers of the two columns.

Whenever this method is adopted, a curve of much the same form as that shown is obtained. At the head of the curve are the geniuses, at the tail the duffers, and between the two lie the large number of candidates of average ability. It will be noticed that about twenty per cent. of the candidates obtained less than thirty-two marks; these candidates are clearly failures, who ought not to have been entered for the examination. On the other hand, we have nearly twenty per cent. who obtained more than about sixty-five marks; these candidates are of distinct superiority. Between the marks thirty-two and sixty-five, however, the curve is practically a straight line, and it is difficult to decide upon a point of separation between these limits. Suppose, for instance, that fifty marks were taken as the standard of a pass, in which case forty-four per cent. of the candidates would be successes and fifty-six per cent failures. Such a standard would be purely arbitrary; for the curve shows that a distinction thus made is not a real one, and it could only be justified when a line of demarcation must be drawn somewhere.

The only true points of separation between different classes of candidates are, in this particular curve, near the marks thirty and sixty-five. The best way to show the departures from the mediocrity is to draw a straight line along the centre of the curve. The points at which the curve leaves the straight line can thus be clearly shown, and they indicate very definitely the standard which should be taken for a first class and the standard for a pass. From the present curve, for instance, the examiner would conclude that candidates with sixty-five marks or more out of a hundred would be first class, and between thirty-two and sixty-five second class; while candidates with less than thirty-two per cent. of the maximum number of marks would be failures. These percentages differ slightly for different examinations, but the general form of the curve remains constant; there is always a distinct head and tail, and the points where they begin are immediately seen by placing a straight-edge along the middle of the curve or by drawing a straight line along it. By means of this examination curve, therefore, the separation of candidates into their proper grades can be accomplished with scientific precision.

R. A. GREGORY.

Wandsworth, S.W.

Salaries of Assistant-Masters.

WHAT does Mr. Paskins mean by the law of supply and demand? That the supply increases with the demand, or that the price falls as the supply increases?

I think I am right in saying that most teachers enter the profession without knowing what they do. They find in ten years or so that their lot must be perpetual worry and anxiety to make ends meet, unless they get a lucrative headmastership or a boarding-house. The great majority of assistants cannot get either, because there are not enough to go round. The case is made worse by the practical exclusion of laymen from the chief posts in the teaching profession, in spite of a clause which the Charity Commissioners insert, I believe, in all their schemes, that no one shall be disqualified from holding any post by reason of not being in holy orders. When this solemn truth dawns on them they begin to look out for other work; and the less enthusiastic teachers, if they have special ability, become solicitors, or get some literary work to do, such as writing for the newspapers. I don't know how many do this, but I have met with several, and a great many more who have tried.

When the true state of things becomes known, as it is becoming known, we may expect the supply of teachers to fall off. No man who has confidence in his own powers will enter a profession where merit and service count for so little; he will prefer to take his chance where he may at least expect a fair field and not very much favour. Then one of two things must happen. (1) Either a means must be found by which a good teacher, after certain years of experience, will be paid enough to free him from sordid cares in whatever school he may be; or (2) the quality of teachers must drop. The first alternative would be made easier by placing appointments to headmasterships in the hands of the Board of Education, if they carry out the principle of choosing the best man, which now is a dead letter; and by State aid to poor secondary schools by which the services of one or two first-rate assistants might be adequately repaid. The second alternative would be disastrous. You cannot expect to get a first-rate teacher for £15 (fifteen pounds) yearly and his board; if you get one for £150, that is your good luck and his bad luck. To buy in the cheapest market is generally a mistake, but in education it must have the gravest effect on national character.

W. H. D. Rouse.

Rugby,
June 1st, 1900.

Nature Study, Drawing, and Modelling in Plastic Material.

I have read with interest the letter in the June number of your Magazine advocating the use of plastic material as a means of training to habits of observation. I am interested because one of the main efforts of my life has been, in season and out of season, to urge upon teachers the absolute necessity for this training as the foundation and mainspring of all early education.

In an address to the boys of Wellington College, the late Canon Kingsley said: "The first thing for a boy to learn after obedience and morality is a habit of observation—a habit of using his eyes. It matters little what you use them on, provided you do use them. It is said that knowledge is power, and so it is; but only the knowledge that you get by observation. . . . . I don't mean to undervalue book-learning, but the great use of a public school education is not so much to teach you things as to teach you how to learn. And what does the art of learning consist in? First and foremost is the art of observing. Therefore I say that everything which helps a boy's powers of observation helps his power of learning; and I know from experience that nothing helps that so much as the study of the world around you."

If the art of learning is the art of observing, then anything which assists and strengthens the observing power is worth the teacher's careful consideration. First and foremost we may place the use of some plastic material, such as clay or plasticine; all things considered, I prefer the latter. With the plastic material we reproduce objects as they really are, and not as they appear to the eye. And to make models of the things themselves has great attractions for children, as witness their delight in building houses and castles in the sand, or even in making mud pies. Plastic material, too, offers the most perfect facility for correction again and again to be made.

But we must not overlook the claims of drawing as an agent for cultivating powers of accurate observation. It is true that drawing is neither so easy nor so effective as modelling in plastic material; but it possesses advantages of its own. It is so much more widely applicable and so much quicker of execution as, perhaps, to be preferred to the slower manipulation of clay or plasticine.

There are probably few, if any, children who cannot be taught to sketch simple objects from nature with passable truth. "At the outset, no doubt, they will fall into the fallacy of trying to draw, not what they see, but what they think they ought to see. A table has four legs; therefore, if they draw a table, they must put in the four legs somehow, even if they have to stick the furthermost one in any comic or impossible position. But once they have been persuaded that what they have to do is only to put on paper what their eyes actually do see, and have been shown in a few simple cases what that is, and how they may seize the more characteristic points in it, then they can almost teach themselves." No matter how crude and inartistic are the first efforts of the children, that is no cause for discouragement; the main object, that is the power of looking into things, will be achieved.

George Ricks.

Uxbridge Road, Kingston-on-Thames.

The Geneva Holiday Courses.

I should like to call attention, through the medium of your columns, to the holiday courses in modern French which are being held at Geneva this year for the ninth year in succession. They begin on July 17th and last till August 28th. English teachers cannot, of course, get away before August; they are, however, invited to take the last four weeks of the course; the fees, for at least twelve hours' instruction per week, amount to the very moderate sum of forty francs. Those who are not obliged to return to England until the middle of September will find themselves, when the courses conclude, in one of the most beautiful towns of Switzerland, within easy reach of Chamounix and Zermatt; and this at a time of year when the weather is usually perfect and the hotels are rarely more than half filled. Instruction and pleasure may thus be very agreeably combined.

The instruction which the University offers is intended to help students to speak, write and understand the French language, and also gain some little insight into its literature and the methods of French literary criticism. A series of small manuals has been written specially for the use of students at these courses, and can be procured from any bookseller in Geneva at a moderate cost. We may notice in detail several points upon which lectures are given.

M. Bernard Bouvier, the director of the courses, and Professor of French literature in the university, lectures upon French poetry of the last century. He also conducts a critical lecture of a most stimulating kind: the students are requested to read over a fragment of some modern French author, to be found in the manual already referred to; the lecturer will then call upon one of the students to "analyse" the piece—that is, to describe the subject matter, to explain what methods the author has employed to produce his results, how those methods differ in the case of different authors, &c. An interesting discussion usually ensues.

Composition is under the direction of Prof. M. N. Harvey. A special book of selections from English prose has been published for the use of students. Those who understand German are also strongly advised to follow the German composition lectures under the guidance of M. Charles Bally, a most careful and stimulating teacher. Pronunciation is entrusted to the care of M. Thudichum, and is in most competent hands. No one who carefully follows his directions could fail to acquire a good accent with attention and practice. M. Henri Mercier, who lectures on social customs, is also full worthy of attention, if only for his excellent delivery and his flow of humour. There are one or two other occasional lectures, which do not form a part of the regular programme, but which all students may attend.

In conclusion, one of the most pleasing features of the course is the personal interest taken in the students by the professors and lecturers. On Saturdays a weekly excursion is made to some point of interest in the neighbourhood, when students have the chance of improving their own and their professors' acquaintance. Information as to board and lodging may be obtained at the Bureau des Etudiants Etrangers, 4, Rue Saint Léger, Geneva; the programme of the courses may be had from the Secrétaire-cassier at the University.

H. J. CHAYTOR.

Merchant Taylors' School,
Liverpool.

Time Table for Cambridge Local Examination.

"Helping as you meet them
Lame dogs over stiles

I HOPE the above may not appeal in vain to some of the readers of THE SCHOOL WORLD.

The arrangement of a time-table is my difficulty. I have two pupils going up for the Cambridge Local (Junior), their ages are fourteen.

Is it possible to prepare them "*thoroughly* when they have but twenty-two hours' work a week (exclusive of music and drawing)? The subjects they are taking for the examination are French, Geography, History, Scripture, Shakespeare, and of necessity the compulsory subjects. In addition to the foregoing they learn Latin, Roman History, Mythology and English Grammar. They have, up to the present time, devoted three hours a week to French, one-and a-half hours each to History and Geography, three hours to Arithmetic and five hours to the preparation of their lessons. The remaining eight hours have been divided between the other subjects. I am writing this letter hoping that some fellow-teacher, who has had more experience than I, may tell me if my plan of work is likely to prove successful or not. Should the latter be probable, can some suggestions be given me as to how I can best economise the time given to study so as to avoid cramming, and yet obtain the desired result, *i.e.*, that my pupils may pass their examination next December. I feel that mine is not an unique difficulty, but that there must be many more who would gladly welcome some help, however small, in putting "much study" into "little time."

D. G.

June 9th, 1900.

The National Home-Reading Union.

MAY I ask the favour of your kind assistance in making known to teachers that the *new* book list for the Young People's Section is now ready, and will be sent by return of post on receipt of the fee of one shilling and sixpence (which also covers the cost of the magazine containing the articles upon the books, with suggestions and questions especially useful to teachers).

The book lists of the Union are not published, as a rule, until October 1st, but the committee have made a special effort to issue this list early, in the hope that it will be useful to teachers who desire to requisition books, and to plan out their work for the coming season.

M. C. MONDY, *Secretary.*

Surrey House, W.C.,
May 25th, 1900.

PRIZE COMPETITION.

No. 11.—ENGLISH ESSAYS.

Senior Competition (above 16 years of age).

EXAMINER'S REPORT.

(1) *Polar Exploration.*—Ten essays were sent up on this subject. Out of these we select four as being rather better than the rest—that by B. W. Watson, which subdivides the subject into five paragraphs dealing respectively with the objects, the dangers, the pleasures, the history, and the results of polar exploration; that by Lucy Fildes, which is well expressed and very neatly written; that by John A. Partingdon, which, though well arranged, has not been divided into separate paragraphs; and that by J. A. Jukes, which goes briefly and clearly through the main points.

(2) *Patriotism.* Thirty-seven essays were sent up on this subject, and almost all by girls. The average standard of merit is high. Out of the many that deserve commendation, we select four for special mention, viz.: those by V. Hyett, Margaret Tree, Mary Nina Searl, and Dorothy Harris. The essay written by Thomas E. Casson gives proof of originality and cleverness; but it is not always easy to catch the drift.

(3) *Wild Flowers.*—Sixteen essays. All more or less creditable. We select for special mention the essays by Edna Darbyshire, Andrew B. Tickle, E. L. Guilford, Mary Dorothea Wylde, P. A. Collier, Magaret Waltham, and Elizabeth Pilcher.

(4) *Knowledge is Power.*—Thirteen essays. Average standard not quite so high. Among the best we place those by D. K. Wiles, John Read, Theo. Vawdrey, and Digby Wrangham Hardy.

(5) *Newspapers.*—Fourteen essays. We select for special mention those by Helena A. White, F. W. Lane, and C. F. Wadlow.

(6) *Alfred the Great.*—Thirty-two essays. Amongst these we have marked nine as moderate, eleven as very fair, and twelve as good. The writers of these last-named are Edith Carter, Dorothy Gregson, Gertrude Withell, W. Froude, Edith Brockington, Franklyn Cannon, G. Hickman, Lilias Dunbar, Fanny Brierly, Margaret Hutchinson, Leila Kenyon, and Ethel Norton. These names are given in any order, and not in the order of merit.

Result.—Among the Senior Competitors we award the first prize to Mary Nina Searl (High School for Girls, Sidcup) for her essay on Patriotism, and the second to Fanny Brierly for her essay on Alfred the Great.

Prize Essay.

Patriotism.

At this time of national excitement, when we are sometimes warned lest we foster a war-spirit under the name of loyalty, it is well to endeavour to gain some light on the often misapplied word—patriotism."

What, then, is patriotism? In the dictionary it is simply defined as "love of country;" and this is all-comprehensive, if we understand "love" in its truest sense, and when we think of the whole-hearted devotion which love inspires. Love of our country must be, first and foremost, an ardent longing for its moral welfare—not necessarily for extension of dominions, as some think—that in itself is mean and paltry. Yet a true patriot will often desire larger foreign possessions, but only that the nation may have room to grow, that its energies may not be cramped, and that its power for good may be increased. Then, also, a true patriot means a true man. Even as Cicero declared that friendship cannot exist except between good men, so we affirm that no one can be a true friend to his country except he be a good man.

Unselfishness is absolutely necessary. To many a man, at first actuated by patriotism, has ambition promised rewards which have proved more tempting than those to be gained by a single-minded devotion to the country's welfare regardless of individual interests. Oh! how many times has not ambition been mistaken for patriotism! And, on the other hand, has it not sometimes happened that men have been scorned as ambitious, who have yet only desired to attain a higher position, that they may have a greater power for good? So closely, alas! do ambition and patriotism resemble each other outwardly, and so seldom is the latter entirely separated from the former, that we look with admiration on any instance, in which ambition has obviously been absent and patriotism alone present. When, in 1610, the Russian nobles chose young Michael Romanoff to be their Emperor, both he and his mother did their utmost to resist this decision, feeling that the country needed an older and wiser man at its helm. Nay, the noble mother begged with tears, though in vain, that they would choose some person more capable of governing the people. Here, indeed, was patriotism; here were the country's welfare and the glittering dignity of the imperial throne antagonists in the lists, and patriotism was for once victorious!

Yes, patriotism means sacrifice. It does not simply consist in a calm feeling that the country must be right, nor in hanging out flags on the occasion of some victory—though truly such small things show that there is existing a greater love of country than in times of peace we are inclined to believe; no, patriotism means an expenditure of energy, a self-effacement, a largeness of soul, a purity of motive, and a reaching towards the highest, which have made it become the actuating motive in the lives of the greatest men the world has ever seen.

Mary Nina Slake
(Age 16.)

Junior Competition (under 16 years of age).

Examiner's Report.

(1) *Uses of Books.*—Twenty essays were sent up. The spelling and punctuation were generally correct; and the composition, though of course unequal, was fair throughout. The essays by Mona Drysdale, Agnes Fitzpatrick, Gertrude Charlotte Hough, Joan Jennings, Louie F. Todd, Arthur P. Harry, Emie Weatherby, T. E. Reynolds, and S. L. Blexley, were among the best, and of these nine we give the preference to the two first-named. The essays by E. Todd (13½) and by Edwin H. Wethey (12¼) were creditable, considering the ages of the writers.

(2) *Holiday Tasks.*—On this unpopular subject no essay was written.

(3) *Soldiers.*—Thirty-one essays were sent up on this subject. Among the best we place those by Ethel Kisch, James Harrison, Lucy Lee, H. W. Bate, Vera M. Abbott, Maddie Ross, H. C. Fenaby, M. Perceval, M. Raymond Barker, Gwen Maitland Walkins, Nellie Chamberlain, A. R. Turtle, and Christina McDaniels. An original and well worded essay was written by Eveleen O'Dea; but the matter was not quite enough to the point. Three creditable essays were written by Clarissa Mary Herrick, Edith Madge Burling, and Miss V. Lloyd all 13 years of age. These three essays are scarcely, if at all inferior, to those written by competitors one or two years older.

(4) *Prevention is better than Cure.*—Of the four essays written on this subject none is of especial merit, though three out of the four are creditable. One essay by a child of 12 (Cornelia Dodd) is well worded, but the matter is mostly irrelevant.

(5) *India.* This subject drew the largest number of competitors—52 in all. Being of a concrete and non-speculative character, and coming well within the geographical course likely to be taught in class, it was perhaps considered easier than any other. In one respect, however, it was the most difficult. On account of its width and comprehensiveness it was less easy for the writer to observe the rule of proportion, *i.e.*, to give an equal degree of prominence to each branch of the subject. One competitor, for instance, gave a very fair account of the Indian races prior to the Mohammedan conquest, but very little besides. Another gave almost all his space to the battle of Plassey. In some eight or ten essays, chiefly, but not always, from the same school, there are four or five brilliant sentences which are the same *verbatim.* Such sentences must have been learnt by heart from the same book. Many of the essays on India were creditably done. We picked out nine as being somewhat above the average, and among these nine we give the preference to the essay written by T. E. Dann (Morpeth Grammar school), and that by N. Turner (Old Manor House, Ipswich), both aged 15. Several good essays were sent up from Sexey's Trade School, Bruton. A neat little essay was sent up by Bertha Price, only 11 years of age, and another by Thomas E. Beacham, a boy not even 10 years old.

(6) *Comparative Advantages of Town and Country Life.*—On this subject twenty-two essays were sent up. In these essays the standard of merit is more nearly equal than in those written on any of the other subjects. Though the composition is fairly good throughout, there is no essay of exceptional merit. Among the best of this batch we place the essays written by E. M. Nixon, A. S. Twidle, Kathleen Patrie, E. M. Marshall and A. Pedley.

General Remarks. (1) Spelling needs attention. Among the most noticeable mis spellings are the following:—comparitive, primative, axiety, burgular, jewells, ennumerate, crouded, vessals, buisness, maratime, famin, immence, approoch, amphitheartre, emense, organisateon, benifit, indentify, battilions, unequaled, dissappoint, comemmorate, batallions, gallentery, reformitory, sich. (2) The word "nice" occurs fourteen times at least amongst these essays, and always in a vague sense. It would be a good thing to prohibit the use of this word altogether. (3) Colloquial or slang phrases occur here and there:—grown-ups, chic, buses, a lot more, all agog, a lot of people. On the whole, however, the use of such phrases is commendably rare in the junior essays. (4) The following are examples of wrong words or wrong constructions:—some places like Cumberland, Westmoreland, Clifton, &c.; no amusements like in a town; which cannot be done without; town and country life have each their several advantages; carriages rustling by (for *rushing by*); India compared with its size (for "India in proportion to its size"); India is one of the greatest ports of Asia; India is a large place; it has a few good harbours (where the sense shows that *a few* should have been *few*); neither large or important; India has a largest rainfall than on any other place in the world; puppies are grown for to make opium; during some centuries it was celebrated for its manufactures (where the context shows that it should have been worded, "for some centuries past it has been celebrated"); the Indian mutiny (1857-1858) has long been planned (where *has* should have been *had*); we will find (where *will* should have been *shall*).

Result.—On the whole we consider that the first prize among the juniors has been won by Mona J. Drysdale (Mortimer House School, Clifton), on the "Uses of Books," and the second by F. E. Dann (Morpeth Grammar School), on "India." As far as the composition is concerned, there is nothing to choose between these two essays. We give preference to the former on account of the originality of its thoughts and the greater difficulty of the subject.

There are several other essays for which we should have liked to give some reward. We must congratulate the schools which have taken part in this competition, both Junior and Senior, on the general excellence of the compositions that have been sent to us.

Prize Essay.

The Uses of Books.

One of the delightful things about a good book is, I think, its companionship. While we are able to enjoy good books, we need never lack friends. We are surrounded by an imaginary world which is peopled with good and noble characters, who let us share their inmost thoughts.

Books are, indeed, the only means we have of entering into the thoughts of the great men of all ages. While we commune with them, we are for the moment lifted up to something of the same height as that on which they stand, and we see the prospect beneath with their eyes. What is real and vital stands out sharp and clear; what is false and trivial is lost. Nor is the good we get from reading transitory. We read some noble thoughts, ponder on them, and find them true. They become also our own, a possession none can take away from us; for they mould our characters, and enter into our very being.

And if a book can form the character of an individual, can it not also form that of a nation? The Bible made Puritan England. The Puritans had many faults; they were narrow and uncultured; but they had moral dignity, moral fibre; they were God-fearing, God-serving men.

The ways in which books are of use to us are innumerable. Scientific books, for instance, help us to appreciate the manifold forces and beauties of nature that lie around us.

History has been called "Philosophy teaching by example." It makes us realise how people lived in past ages; how they built up our constitution and laws. Biographies of great men are very valuable, especially when they do not dwell too much on unimportant facts, but let us see something of the inner lives of the persons described.

Good novels, whatever may be said to the contrary, are of very real use in widening our sympathies. While we read a novel, we lose our own personality in that of the hero or heroine, and we feel emotions and go through experiences which we may never have in our own lives. Novels enable us to enter more sympathetically into the feelings of others.

Poetry leads us to the true and beautiful, makes us love beauty, and speaks to us as perhaps nothing else save music can.

The influence a book may have is incalculable. In Milton's noble words—a "good book is the precious life-blood of a master-spirit, embalmed and treasured up to a life beyond life."

But after all, the power of a book has some limitations. No two persons will read Shakespeare alike. One will understand more than the other; neither will understand more than what is already in some degree in himself. A book cannot create faculties in a man, nor can it give him fresh qualities. No man ever became a genius by sheer force of reading. There must be some affinity between two minds, or they will never understand one another.

Finally, we may say that the chief end of a book is to awaken and develop those good qualities which might otherwise have lain dormant in a man for ever.

MONA J. DRYSDALE.
(Age 15.)

List of Schools from which Essays were received.

Far Hill School, Stroud, Gloucester; High School for Girls, Sidcup; Avondale, Clifton Road, Clifton; The Cowley Schools, St. Helen's, Lancs.; The Grammar School, Bridgenorth; Springfield Girls' School, Corbridge-on-Tyne; Duke House, Trowbridge; Park Road School, Bingley, Yorkshire; Penfillan House, Folkestone; The Castle, Tiverton, Devon; High School for Girls, Britannia House, Worcester; Mortimer House School, Ipswich; Trent Cottage, North Eaton, Derbyshire; Frederick Place, Weymouth; Pupil Teachers' School, Mesner Street, Wigan; Ursuline Convent, St. Mary's, Waterford; Sexey's Trade School, Bruton, Somerset; Mortimer House, Clifton; The College, Stoke Bishop, near Bristol; The College, Oswestry; Kilcarrel, East Molesey; Nonconformist Grammar School, Bishop's Stortford, Herts; Hood Street, Morpeth; The Convent, H.C.J., St. Leonard's-on-Sea; Warehousemen, Clerks and Drapers' Schools, Purley, Surrey; Ursuline Convent, the Downs, Wimbledon; St. Keenan's College, Kilkenny, Ireland; Intermediate School, Newport, Monmouthshire; Convent of Notre Dame, Brixton Hill, London, S.W.; St. Ann's High School, Ursuline Convent, Waterford; Halden View School, St. David's Hill, Exeter; Nunhill House, Bishopsthorpe Road, York; Northampton County School, East Park Parade, Northampton; School at Long Street, Walton-under-Edge, Gloucester; Strada Carmine, St. Julian's, Malta; Flock House, Collegiate School, Taunton; Gumley House, Isleworth; Southgate House, Devizes, Wilts; Fleetwood, Great Wick Road, Worthing, Sussex; St. Wilfrid's College, Oakamoor; Notre Dame High School, Mount Pleasant, Liverpool; Convent of Notre Dame, Plymouth; Katharine Lady Berkeley's School, Walton-under-Edge; Beechwood, Malton, Yorkshire; Dorcester House, Clacton-on Sea, Essex; Dyke Road, Brighton; Ladies' College, Tiverton, Devon; Aberdeen Grammar School, Mid-Stocket Road; The Palace, Lichfield; Ormesby, Beulah Hill, S.E.; Mantle Road, Higher Grade School, Brockley, S.E.; Leston Avenue, The Park, Nottingham; Lower Newton, Waterford, Ireland; Winchester House School, Redland, Bristol; Roslyn House School, Liscard, Cheshire; Kensington Park Road, Bayswater, W.; Augustus Road, Edgbaston, Birmingham; St. Joseph's Convent, Clapham, London, S.W.; Bellerine Convent, Prince's Park, Liverpool; Tandlehurst, Manor Road, Liscard, Cheshire; Skipton Grammar School; Lark Hill House, Preston, Lancashire; Corsica Street, Highbury, London, W.

OUR CHESS COLUMN.

No 19.

As announced in last month's number of THE SCHOOL WORLD, a gentleman has promised to give a prize to the winner of the best game between two boys submitted to him for consideration. A specimen game was published and annotated so as to illustrate the points that will be expected in the games sent in for competition. For the next month or two I shall treat typical games in the same way, in order that competitors may fully realise what they must aim at. These games will also be utilised for the purpose of our monthly competitions. One of our prize-winners, by the way, asks if the games may be played by correspondence. To this there can be no objection, provided, of course, that they be finished before October 30th, when the competition closes.

Of course, summer is a comparatively "close" season for chess, but I hope that more schools will arrange chess fixtures during the winter term. In a letter published in the "A.M.A. Circular" for May, Mr. Andrews, of the Coopers' Company's School, Bow, emphasises the fact that chess has become as much a national game as cricket and football, and suggests the formation of a London league for the schools of the metropolis. I hope that this will, before long, become an accomplished fact. Already there are unmistakable signs of the growing popularity of the game among schoolboys, and several school magazines now possess a regular chess column.

SPECIMEN GAME NO. 1

	WHITE.		BLACK.	
1.	P—K4.	1.	P—K4.	Beginning.
2.	P—KB4.	2.	P x P.	
3.	B—QB4	3.	Q—R5 (ch.).	
4	K—B1.	4.	P—Q3.	
5.	P—Q4.	5.	B—KKt5.	
6.	Q—Q3.	6.	QKt—B3.	
7.	B x KBP (ch.).	7.	K x B.	[illegible]
8.	Q—QKt3 (ch.).	8.	K—Kt3.	
9.	Q x QKtP.	9.	Kt x QP.	
10.	Q x R.	10.	KKt—B3	
11.	QKt—R3	11.	P—KB6	
12.	P—KKt3	12.	B—R6 (ch.)	
13.	K—K1.	13.	Q—KKt5.	
14.	QB—K3.	14	P—Q4.	
15.	Q x QRP.	15.	Kt—QB3.	
16.	Q x QBP	16.	P—Q5.	An Ending.
17.	B—Q2.	17.	Q x KP (ch.).	
18.	K—Q1.	18.	P—KB7.	
19.	Kt x B.	19.	Q—KB6 (ch.).	

And Black must win.

In moves 1—6, the beginning, there is no mistake; the opening is correctly played.

Move 7 was a mistake, but White gets his piece back. This was all thought out carefully, and, therefore, was not a mere blunder. The winning play must contain no slip. 11 P—KB6 is the winning move.

After 16 P—Q5 White cannot save the game; the ending given is one of several. Only one ending need be sent.

The prizes this month will be awarded for answers to the following questions:—

1. What is the name of the Opening?
2. Why did Black play 10 KKt—B3?
3. Why did Black play 14 P—Q4?

RULES.

1.—Solutions to be sent on post cards.

2.—Give name, date, age and school address. (Age limit, 21.)

3.—Solutions to be received on or before July 12th.

4.—Address:

The Chess Editor,
THE SCHOOL WORLD,
St. Martin's Street,
London, W.C.

Result of June Competition.

Four competitors obtained three marks:—Messrs. Poyser, Dick, Leonard, Russell. Score sheets for twenty-five games have been sent to each. These should be useful in connection with the competition referred to above. C. Mellows obtained one mark. These marks are added to those given in the June number.

Manchester Grammar School has won both its games against Trowbridge High School in our Inter-School Correspondence Tourney. These two clubs and Merchant Taylors', London, are competing in the final round. The result will be announced in the September issue.

CALENDAR.

[*Items for the August Calendar must be received by July 19th*, 1900.]

July, 1900.

Monday, 2nd.—First Holiday Course in Modern Languages begins at Paris.

Tuesday, 3rd.—Scholarship Examinations begin at Westminster, Repton and Oundle Schools, and at Eastbourne College.

Scholarship Examinations begin in Divinity and Classics at Brasenose College; and in Natural Science at Merton and New Colleges, Oxford.

Wednesday, 4th.—Scholarship Examination begins at King's School, Canterbury.

Saturday, 7th. London Geological Field Class. Excursion to Upnor.

Monday, 9th.—First Holiday Course in Modern Languages begins at Marburg.

Tuesday, 10th.—Scholarship Examinations begin at Eton College, Felsted School, Glenalmond, Weymouth College and Charterhouse.

Examinations for Diplomas in Teaching begin at College of Preceptors.

Wednesday, 11th.—Scholarship Examination begins at Dean Close School, Cheltenham.

Monday, 16th.—Oxford Local Examinations begin.

Holiday Course in French and German Literature, &c., begins at Greifswald; and First Course in French at Neuchatel.

Tuesday, 17th.—Scholarship Examination begins at Malvern College.

Wednesday, 18th.—Scholarship Examinations begin at Merchant Taylors' School, E.C., and at Radley College.

Holiday French Course begins at Geneva.

Thursday, 19th.—Holiday French Course begins at Lausanne.

The August number of THE SCHOOL WORLD will be published on Friday, July 27th, 1900.

The School World.

A Monthly Magazine of Educational Work and Progress.

EDITORIAL AND PUBLISHING OFFICES,
ST. MARTIN'S STREET, LONDON, W.C.

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Business Letters and Advertisements should be addressed to the Publishers.

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The Editors will be glad to consider suitable articles, which, if not accepted, will be returned when the postage is prepaid.

All contributions must be accompanied by the name and address of the author, though not necessarily for publication.

The School World

A Monthly Magazine of Educational Work and Progress.

No. 20. AUGUST, 1900. SIXPENCE.

MANUAL INSTRUCTION IN WOODWORK.

By A. Godfrey Day, A.M.I.M.E.
Director of Studies, Bath Technical School.

IN this article it is proposed to sketch a course of instruction in woodwork suitable to youths from 12 to 15 years of age, and who are pupils in a secondary school or school of science.

The training should provide for

(1) Instruction in the actual use of tools and their specific selection for different varieties of work.

(2) The preparation and use of working drawings, made either full size or to scale.

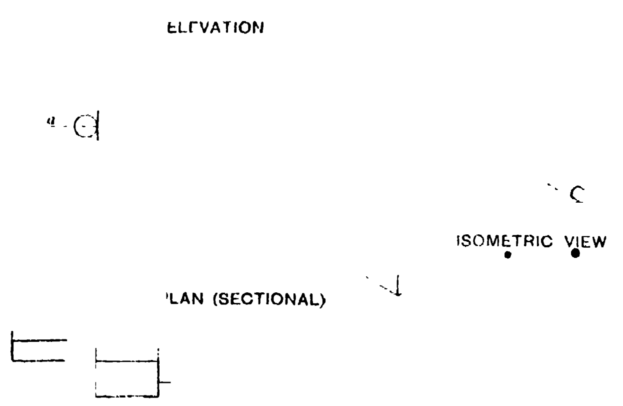


Fig. 1. Mortise and tenon, with keyed abutment

(3) Exercises in reading working drawings, and in applying the necessary working lines to the material.

(4) Exercises specially framed so as to connect the study of practical geometry in the school with the practice of the workshop.

(5) Acquirement of a knowledge of the various woods used in construction and their selection for various classes of work.

The question at once arises as to the relative positions of drawing and woodwork in such a course. Too much stress cannot be laid upon the use of working drawings. The writer strongly advocates the instruction in the two subjects being carried forward side by side.

At first, every woodwork lesson should commence with one hour devoted to drawing, and this should be followed by two hours' practical woodwork. Later on the method may be varied; the student should make his woodwork exercise from a blackboard drawing, given in plan and elevation (and if necessary in section), with the figured dimensions marked on it. After completing the example, the pupil should proceed to make a drawing showing other views of the example from his own completed work.

Isometric projections may also be made from given plans and elevations. This form of drawing gives excellent practice in interpreting the meaning of plans and elevations, and it closely resembles the method of setting out working lines on squared-up material. Developments of solids also provide capital practice, and should not be neglected. These drawings show the unfolded surface of the object, and in many cases constitute a valuable aid to the construction.

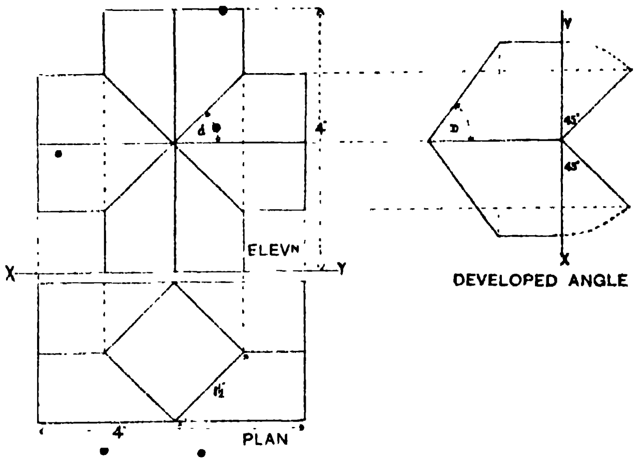


Fig. 2.—Intersection of two square prisms.

Examples of each kind of drawing are shown in Figures 1, 2, 3 and 4.

Fig. 1 shows a plan and elevation of a mortise and tenon, with keyed abutment, and is taken from a drawing made by a scholar in the first year. It also shows an isometric projection of the separated parts. These views were worked out as an exercise from the given plan and elevation.

Fig. 2 shows a plan and elevation of the intersection of two equal square prisms, with their axes at right angles. In constructing this example it is necessary to know the real angle D; the geometrical method of determining this angle is shown on the right-hand side.

Fig. 3 represents a more difficult example of intersection. The intersection is between a square post and a smaller square strut inclined to the post at an angle of 45°. The plan and elevation is shown on the left side of the diagram. The developed surfaces of the post and strut occupy the right-hand side, and the true shapes of the joint planes are worked out by the side of the elevation. This is an excellent example of the value of a knowledge of solid geometry. Many good joiners would fail in an attempt to make such a piece of work. A simple method to adopt for the practical exercise is to cut out the developed pieces, wrap them round the strips of wood and cut out to the lines thus found.

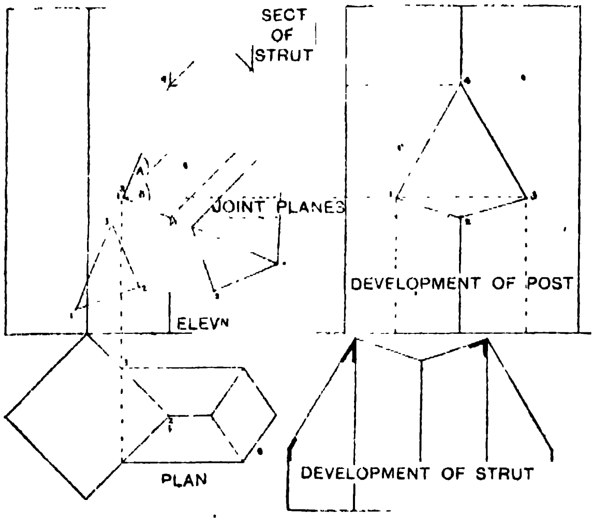


Fig. 3. Intersection of post and inclined strut

Fig. 4 represents one corner of a box with splayed side. Here again the angles or bevels must be found by construction such as that shown on the right. Teachers of geometry will recognise that this is an example of the intersection of inclined planes, the traces of which are shown.

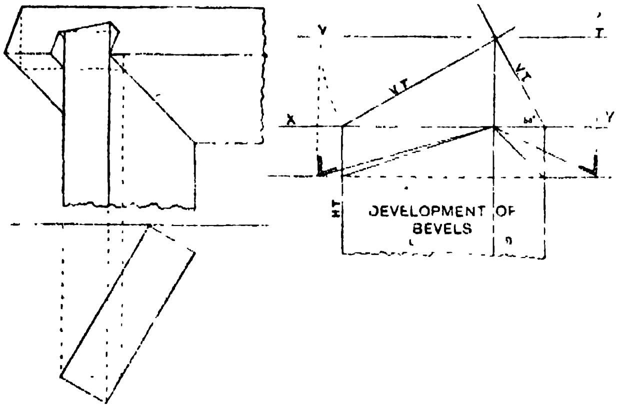


Fig. 4.—One corner of a box with splayed side.

Another important point which has to be decided by the headmaster, and which has been much debated, relates to the selection of a manual instructor. Should he be a skilled workman, with perhaps little experience as a teacher, or should he be a trained and experienced master who has taken a course in woodwork? The writer is inclined to favour the former course. The instructor may, while new to his duties, have the assistance of a form-master to superintend the preparation of the working drawings and the discipline of the class. Probably an engineer's pattern maker, or a master joiner, or cabinet maker with some knowledge of drawing can be found, and if he is a man of intelligence and good address he will rapidly adapt himself to his new sphere. The headmaster will, of course, give him much useful advice in the methods of class teaching, and see that the course he adopts is properly graduated and of educational value. If, however, a class master undertakes the woodwork, it is very necessary for him to be a really competent worker in wood. Example is here, as elsewhere, better than precept. A man who cannot skilfully and accurately work out any exercise of the course will be sure to pass badly fitted joints, and perhaps give unsuitable or impossible examples. Accuracy is of the first importance. Let a lad once succeed in escaping with badly executed work and his progress will be for ever marred.

In organising the work in the city of Bath, the writer was fortunate in securing the services of a most intelligent cabinet-maker, who rapidly became an enthusiast, and has developed into an excellent teacher. This gentleman, Mr. F. W. Richter, has prepared for his own use a unique collection of teaching models in woodwork through all its stages. In the limits of the present article it will be impossible to deal with these.

Another most successful instructor, with whom the writer was in daily contact for about eight years, and from whom he obtained many useful hints, which he here gratefully acknowledges, was Mr. T. Skelcher, of the George Dixon Technical Day School, in Birmingham. This gentleman combined sound knowledge of the trade of an engineer's pattern maker with disciplinary methods acquired as a volunteer officer. The combination is recommended to any headmaster seeking an instructor.

Course of Work.

The course of work at the Bath Technical School is arranged for the three years of a "School of Science" curriculum.

The workshop (a view of which is shown in Fig. 9) is arranged for 24 pupils, but the classes rarely exceed 20 in number in the first year, while in the second and third years the classes are reduced to 12 or 15 pupils.

In each year the pupil devotes three hours per week, *i.e.*, one morning or afternoon session, to his manual instruction. Part of this, as already explained, is devoted to the preparation of working drawings, or to lessons on woods and their specific uses for various purposes. The drawings are executed in the workshop. Each boy is provided with a thin drawing-book, which he fastens down with drawing pins to a drawing board, in order that he may work with tee-square and set-squares. Notes on materials are made in the same book. The note-book thus prepared serves as a record of the work of each scholar. It is kept in a rack on the bench and inspected from time to time.

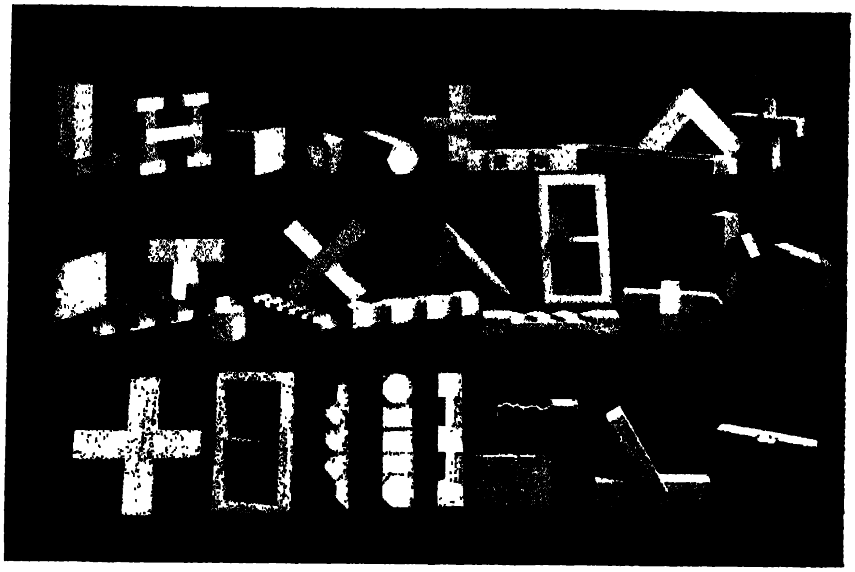


Fig. 5.—First Year's Course.

First Year's Course. The work of the first year consists of exercises in sawing to length, planing and squaring up use of chisels in (*a*) mortising, (*b*) shaping.

A good deal depends upon the right treatment of these early exercises. For instance, supposing a piece of board is to be planed to a smooth, flat surface. Many persons would at once apply the plane. A good workman, on the contrary, would examine the board with a straight edge, and then plane down the projecting parts. Again, unless a right method is adopted, it is almost beyond a boy's ability to square up a piece of timber to a given size. The right method is in the following steps:—

(1) Plane one side, using straight edge continually before applying the plane.

(2) Square one edge.

(3) Gauge for width from this squared edge.

(4) Square the edge to the gauged width.

(5) Gauge for thickness along both edges.

(6) Plane one side to gauged thickness, using straight edge.

Full instructions thus systematised should be given for all the early exercises.

Fig. 5 shows over thirty examples based on the above principles, and executed by boys during their first year's course. These examples are as under, numbering from left to right, and commencing with the top row. They are not arranged in order of time or difficulty.

First Year's Course (*Fig.* 5).

Top Row.—(1) Angle post and wall plate, combining halving and mortising. (2) Model of the letter H. (3) Dovetail joint. (4) Model of a street lamp. (5) Hexagonal prism. (6) Mortise and tenon joint. (7) Notching and inlaying exercise. (8) Pen-tray. (9) Bridle joint. (10) Mortise and tenon, with an abutment and key.

Second Row.—(1) Lap dovetail joint. (2) Cogged joint. (3) Shouldered dovetail joint. (4) Right cylinder and cube. (5) Rectangular notching. (6) Cross-halved joint. (7) Double rectangular notching. (8) Grooved, tongued, and mitred joint. (9) Diagonal sawing and notching. (10) Brad-box, with handle. (11) Flower-pot stand. (12) Oblique joint mortised and tenoned. (13) Bridle joint.

Third Row.—(1) Halved and notched joint. (2) Nail-box, with partition. (3, 4 and 5) Saw and chisel exercises, embracing chamfering, cogging, notching, &c. (6) Corner of a door mortised and tenoned and grooved for panel. (7) Oblique joint, bridle and abutment. (8) Bridle joint stopped on one face.

The Second Year's Course is only a development of the former, but includes the use of other tools, such as moulding planes (ovolo, lamb's tongue, rebate and filister), gouges, dovetail saw, fret saw and bow saw, spokeshave, rasps, and files.

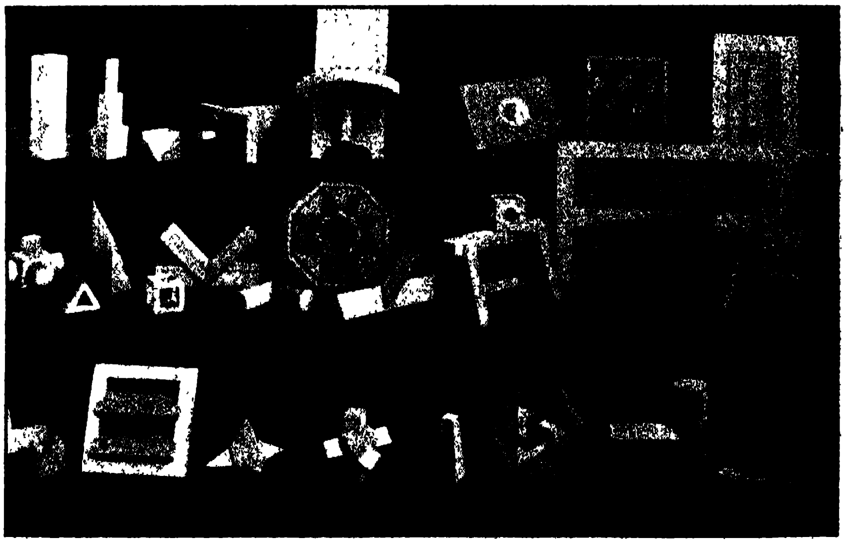


Fig. 6.—Second Year's Course.

In the former course each example would be taken by the whole class, but now there is some differentiation according to ability.

Fig. 6 is a photograph of examples executed by pupils in their second year. These examples include inlaying and marquetry, and several clever examples of clean-cut saw and chisel work. The following is a complete list of the exercises:—

SECOND YEAR'S COURSE (*Fig.* 6).

Top Row.- (1) Angle post. (2) Three rectangular prisms surmounting each other. (3) Cube with the corner cut off. (4) Tusk-tenon joint. (5) Wall bracket. (6) Drawing instrument box (inlaid with shell). (7) Inlaid tray. (8) Small door moulded, with fielded panel.

Second Row.—(1) Cube with cylinder on each face. (2) Hollow triangular prism. (3) Square prism cut off so that the section is a rhombus. (4) Skeleton cube. (5) Bridle and mitred joint. (6) Right-angled intersection of two cylinders. (7) Inlaid octagonal plate. (8) Intersection of a triangular and square prism. (9) Model of a trestle. Hollow and pierced cube. (10) Inlaid box, with tray. (11) Pen-rack. (12) Model of a four-panel door.

Third Row.—(1) Hollow cube. (2) Model of a square ventilator. (3) Cube, with the corners cut off, surmounted with square pyramids. (4) Cube surmounted with six cubes, faces at 45° to faces of first cube. (5) Frustum of a square pyramid. (6) Hexagonal inlaid tray. (7) Intersection of a cylinder with a square prism. (8) Model showing a vertical post with an inclined strut.

The third year's work mainly aims at developing the skill of the pupil, and except for occasional exercises in hand-railing, involves no new principles. Examples of pupil's work in the third year are shown in Figs. 7 and 8. They can be claimed to be not only educational in character, but of real practical value. A list of the examples is given below:—

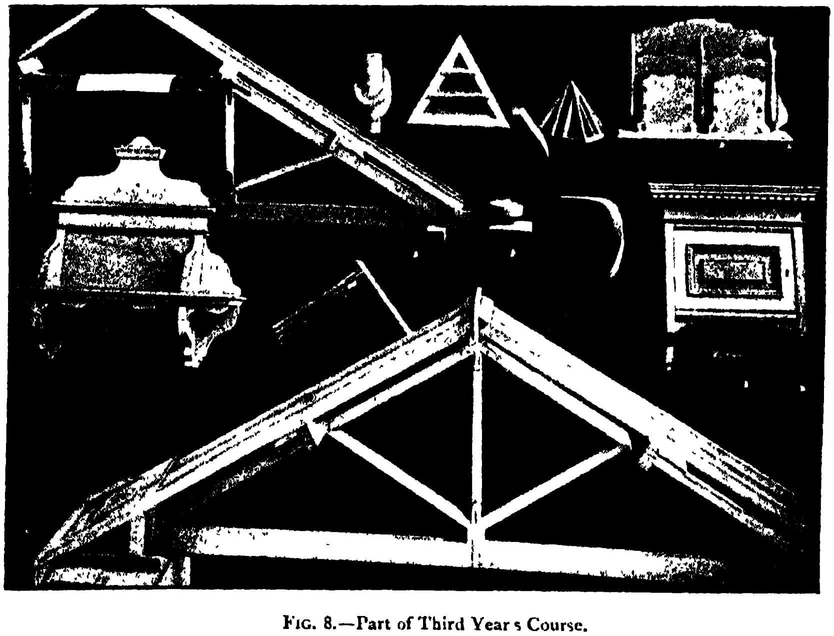


FIG. 8.—Part of Third Year's Course.

THIRD YEAR'S COURSE (*Fig.* 7).

Top Row. - (1) Mortise tenon and scribed joint, with ovolo moulding. (2) Model of a square roof. (3) Model of a segmental arch with movable centre. (4) Splayed intersection of two rectangular prisms. (5) Tusk tenon, with key.

Second Row. - (1) Intersection of the hip rafter with angle tie. (2) Vertical finial, intersected by four hips. (3) Splayed intersection. (4) Intersection of the hips with the ridge of a roof. (5) Model of a semi-circular niche segmental on plan. (6) Model of a lamb's tongue and rebated sash joint. (7) Penetration of a square and triangular prism.

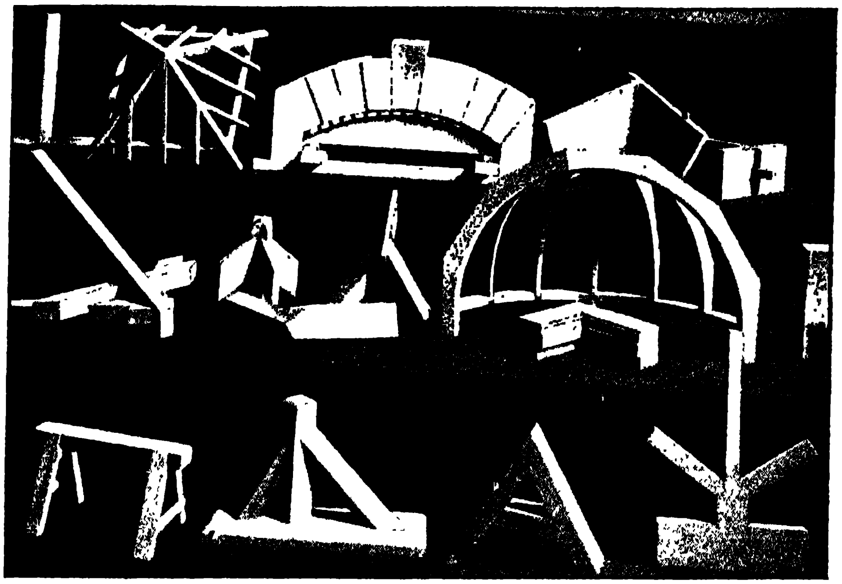


FIG. 7.—Part of Third Year's Course.

Third Row. —(1) Model of a trestle. (2) Vertical post intersected by two inclined struts. (3) Triangular frame. (4) Model of a portion of a king-post truss.

(*Fig.* 8).

Top Row.—(1) Oblique penetration of two cylinders. (2) Triangular ventilator. (3) Model of a square pyramidal roof. (4) Rack for stationery.

Second Row. —(1) Queen-post truss (40 ft. span). Scale $\frac{1}{8}$. (2) Model of a handrail for a scroll shank over winders.

Third Row.—(1) Shaped wall bracket. (2) Model showing the intersections of the corners of a splayed box, &c. (3) Model of a handrail over winders, level landing at top. (4) Hanging wall cabinet in mahogany.

Fourth Row.—Model of a king-post truss, with overhanging eaves.

THE introduction of manual work into an educational establishment can have two ends in view, either to prepare the pupils for a special calling, or to put into play their physical faculties, the precision of the eye, the dexterity and suppleness of the hand, and to oblige the pupils to reason and reflect, whilst at the same time it causes them to know the application of theory to practice, as well as the advantages of both.—M. Roux.

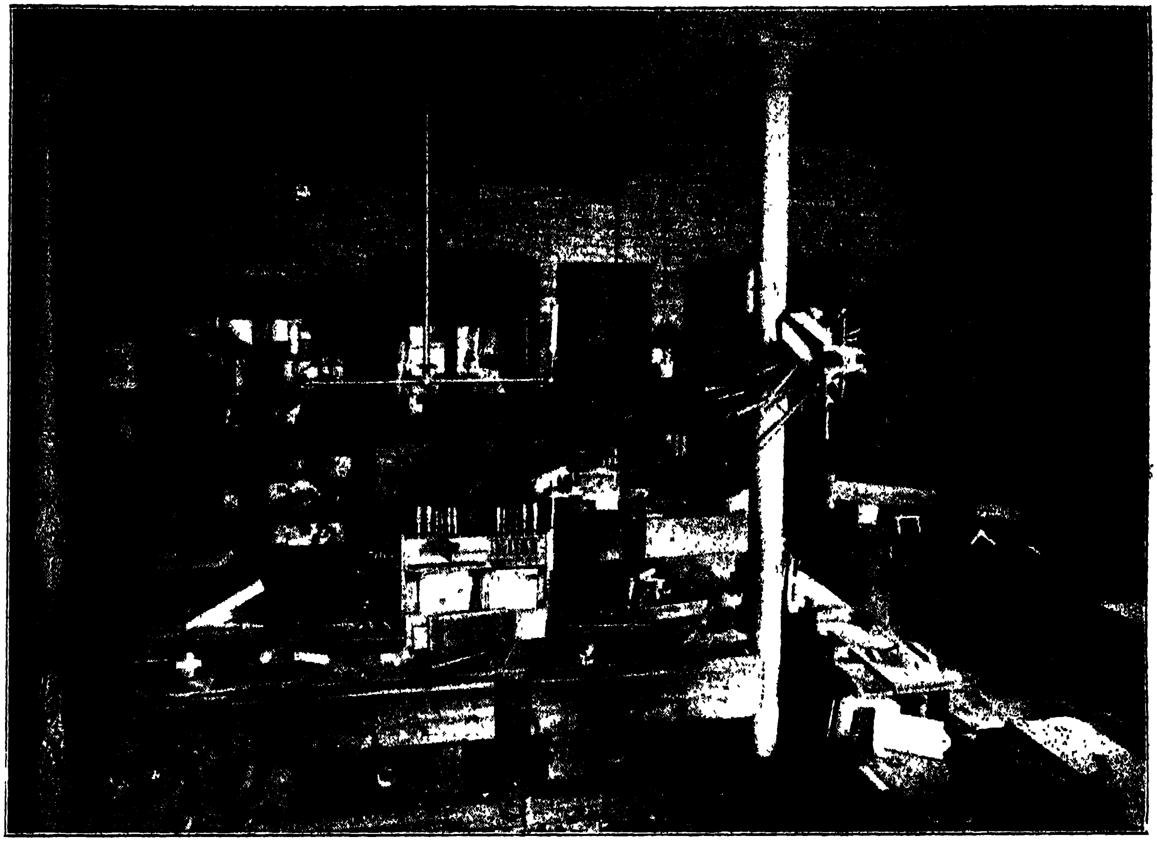


FIG. 9.—WOODWORK SHOP, BATH TECHNICAL SCHOOLS.

A CHAT ABOUT HEADMASTERS.

By the Rev. CANON FOWLER, M.A.
Headmaster of Lincoln School.

THERE is nothing more difficult to write about than so-called "reminiscences"; there is nothing more dreary than some of these "reminiscences" in two or even three volumes which have been poured forth upon the public during the last few years. The authors too often forget that much that may interest them is by no means interesting to others who are unacquainted with the collateral circumstances which really give the stories all their point and piquancy; and yet it is strange how strongly reminiscences of schools and schoolmasters appeal to a large number of people. To have been schoolfellows together is always a bond of union in after-life, and, in whatever part of the world they come across one another, the talk invariably goes back, sooner or later, to the old stories and the old associations, and in such stories the masters, and especially the head, usually play a very considerable part.

It is a healthy sign of our English system of education that it should be so, but it is easy enough to talk of such matters, very hard, however, to write about them. It may be easier to do so from the point of view of the schoolboy, and certainly there is hardly a book in our language which can beat "Tom Brown's School Days," but writers on school matters are apt to degenerate on the one hand into the mawkish and sentimental, or, on the other, into the flippant and (from a schoolmaster's point of view) demoralising. The latest story of school life, though brilliant and amusing from first to last, as we should expect from its author, is, as a story, much to be deprecated, for it is quite at variance with the real life of a public school, and puts a sort of premium upon idleness, getting into scrapes, and defiance of all authority.

One hardly knows which is worse, the preternaturally good boy who works hard, and never does anything wrong, but is unjustly accused, and nearly expelled perhaps by a harsh headmaster, who has finally to acknowledge himself in the wrong, and all ends happily; or the good-natured, but good-for-nothing scapegrace, who never does any work and is always in trouble with the masters, but at last, without having done anything particular either in work or games, wins a good scholarship, or passes high into the Army or Civil Service, or in some way does as well as, or rather better than, if he had worked and put his heart into it through his school career. For our part we prefer the latter, but we have never seen either character in real life.

I am afraid that this is a long digression to begin with, if I may use an incorrect figure of speech, for my task in this article is, as a headmaster, to set down any reminiscences of other headmasters that may occur to me. Now one's personal experience as a headmaster falls under three heads, viz., as a schoolboy, as a colleague, and as a contemporary. Apart, however, from one's personal experience, there are stories which live on from generation to generation, and which may well at times be repeated. One of the earliest of these, as everyone knows, is the account of the famous Dr. Busby walking before the king through his school with his hat on, and when he came to the door, apologising to his sovereign and excusing himself on the ground that if his boys thought there was a greater man in England than himself he would find it impossible to control them.

To fewer people, perhaps, is known the name of the headmaster of Rugby, whose small stature and devotion to the birch was summed up in the school application of the proverb, "Much cry and little wool." Innumerable are the stories recorded of Dr. Keate, of Eton, one of the smallest, yet one of the severest of headmasters; not content with flogging individuals, he flogged them by dozens or by scores at a time. On one occasion it is said that he had a confirmation class sent up to him for examination, and mistaking them for one of these batches, proceeded to flog them all round, refusing steadily to listen to any explanations; and when at length one boy managed to state the real position of affairs, he proceeded to flog them again for making blasphemous excuses. I have known something like this happen with an individual in modern times.

It is curious how the very sternest of headmasters are in some cases the most indulgent, and how certain boys, without being exactly favourites, do things with impunity that others dare not venture upon. Two cases occur to me. One of the best-known headmasters of the century was in the habit of setting Latin verses to be done in school. The boy who finished a verse first held up his hand, and the verse was then read, corrected, and commented upon. In this form there happened to be a dull, but somewhat privileged boy who had never been known to get a verse done in time. One day, to the astonishment of all, he suddenly held up his hand in an incredibly short time after the verses were given out. "That's right," said the headmaster, "let us hear the verse." "Please, sir," replied the youth, "First of April, sir," as was indeed the case. The end of the episode is not recorded, but the consequences are not believed to have been serious.

The other case was that of a headmaster under whom I had the privilege of working for some time. On one occasion a very small boy, at the bottom of the school, was sent up to him for whittling a stick in his seat in chapel. On being asked why he did so, he replied, "Please, sir, your sermons are so dry that I was obliged to find something to employ myself with." The old gentleman was so taken aback by this answer that he burst out laughing, and sent him off without any punishment; but I feel sure that the small boy, with the almost supernatural insight that small boys have into their masters' characters and peculiarities, knew exactly with whom he was dealing.

For my part, I always felt the greatest respect and affection for this particular headmaster; he had, as may be gathered from what has been said, the one fault in his old age of being too lenient to the small boys. This I knew to my cost, for I was just beginning life as a schoolmaster, and had one of the most troublesome forms it has ever been my lot to deal with; the worst of them were in his own house, and I knew that it was practically useless to report any of them. Apart from this, however, he was the *beau-ideal* of a headmaster. He had originally been one of the best of the Harrow assistant-masters, but on being appointed to what was then a small school, with capabilities, however, which he saw might be developed, he had raised it to the rank it now holds among the chief public schools of the country. Tall, spare and straight at nearly seventy years of age, with a clean-cut, handsome face, his very appearance impressed one immediately as that of a man much above the ordinary run. Stern and unbending as his usual aspect was, he had a keen sense of humour, and when his face lit up, as it often did, one could well understand the feeling of the small boys towards him, which certainly did not arise from any disrespect, but from an entire absence of fear. In social life he was a true gentleman of the old school. It was commonly said that he held himself aloof even from the county society; but this was a libel. It must, however, be allowed that he very rarely went out, except to the house of an aged countess who lived not far off, and who used to ask him to meet Lord Beaconsfield, who often used to stay with her. To myself he was most kind, and I always regard him as having given me my start in life. I held a post under him temporarily at first, and before a permanent vacancy occurred he tried to get me a post under a friend of his who is much better known than himself as a "schoolmaker." This was the only time I ever saw this celebrated head. Evidently he was a man of great power, strong will, and pre-eminent ability; but he struck me as being hard and unsympathetic, and as one who would be inclined to treat his masters as if they were boys. I believe that this was far from being the case with those he knew well, and mine were probably only first impressions. Before I saw him, however, I was told seriously by one of the townspeople that he was in the habit of fining his masters half-a-crown if they were late for chapel.

After the resignation of the headmaster above referred to, I was only under one other, a kind and good-natured man, and in many ways an able master, whose only fault was that he tried to please everybody. The wear and tear of school life, however, proved too much for him, and he died, I believe, before he was forty. And here again, as I have done in another article, I might lay stress on the fact that no man is fit to be a successful master who is perpetually worrying. I do not believe that there is any life that is much more trying to the nerves; some men seem to be perfectly unable to stand the strain of illness in the school; it upsets them and unfits them for work, and very few men arrive at the philosophical state of mind of a head I was once acquainted with, who said that he had grown so callous that when he was told a boy had scarlet fever his first impulse was to say, "Send him into school." Part of the worry of infectious illness is due to the fact that certain parents seem to have an idea that the masters give it to the boys for their own particular benefit. The average British parent, though as a rule most pleasant to deal with, is apt to be unreasonable on certain matters. Fagging, for instance, is an institution which the mother of a boy whose husband has not been at a public school cannot understand. She thinks her boy is demeaned or degraded by having to sweep out studies or perform any such menial offices. In my house, as a house-master, I had among my boys a lord's son and a farmer's son; the former was often to be seen performing a housemaid's duties cheerfully, washing up the study's supply of plates and cups, &c.; while the parents of the latter were so angry at his having to sweep a study that they removed him, much to our amusement, at an hour's notice. They had previously appealed to one of the governors, who had had two sons at Eton, so they could not make much of him, and also to the headmaster, who was quite as little inclined to give them any satisfaction.

I remember once meeting Dean Stanley and Matthew Arnold at breakfast, and hearing them discussing Dr. Arnold, especially commenting on the picture frames which he used to draw round the bad mistakes in their Latin prose or verses. This marking of exercises is a characteristic trait of most masters, head or otherwise. Some mark deliberately and neatly all through, while others appear to work themselves up into a state of frenzy until the whole copy at the end is a mass of blots and erasures.

The mention of Dr. Arnold reminds us that the relations between boy and master have been entirely altered from what they used to be. There have been quite as great headmasters before and since, but it is certainly to him that we largely owe the breaking down of the tradition that boys and masters are natural enemies. No head is now considered fit for his post who rules by a system of cane and terrorism; and, on the other hand, we never hear now of the great disturbances which were not uncommon some fifty or sixty years ago, such as the rebellions at Rugby and Marlborough; nor even of practical jokes such as the one played upon the head of a large school in the west, who, on opening his desk in the morning before the school, was surprised to find it full of live ducks, which proceeded, with characteristic noise, to distribute themselves over the room, to the immediate delight, but subsequent discomfiture of the perpetrators.

I ought perhaps to have dwelt more on my views as a boy concerning my own headmaster, but I feel that I can say but little on this point, as he is still alive in a high and honoured position. I could give many reminiscences of him, as I was in his house for nearly five years. Very numerous are the stories that have been told about him, and that still pass from mouth to mouth, but the majority of them, though good and characteristic, are absolutely untrue. He always impressed me at school as a great man, as one who was far above trifles, and who took a broad view even of delinquencies, provided these were simply the outcome of the schoolboy's natural spirit of idle mischief. I remember once standing siege in my study against half-a-dozen youngsters, just as he was going through from the sixth form room. The fun was going on merrily, and I hadn't a single pane of glass left in my window. Most masters would have made a considerable disturbance, but with a short and sharp "What are you doing there?" which in a moment scattered the besiegers to the four winds, he walked on, and nothing more was heard of the matter except that our allowances in due course disappeared, but this was such an ordinary occurrence that it was looked upon with indifference.

He only once made me doubt his insight into boy nature, when after a paper chase which had wrought considerable damage, and brought in complaints from an irate farmer, he addressed the school collectively, and said that he could not understand why boys *would* jump over a hedge when there was a gate close by, but this was only a solitary occasion.

I have said very little concerning the headmaster from the point of view of the contemporary. It has been, and still is, my privilege to know a large number of heads of various kinds of schools, and I could say much concerning them. Very different they are in character and temperament, but, taken as a whole, I feel sure that it would be very hard to find a more conscientious, hard-working, and genial body of men. It is sometimes said that the schoolmaster's calling acts upon his character and renders him stern and unbending, and, at times, self-opinionated and arrogant. This may, to a certain extent, have been true in the old times, but in these give-and-take days, when the relations of headmasters, assistant-masters, and boys are entirely different from what they used to be, the purely autocratic head is an anomaly and a thing of the past.

Headmasters must possess Tact.—What this tact is it is difficult to say. Men possess it or they do not possess it; it is generally born in the man; it is seldom, though sometimes, won by experience, but without it a man cannot succeed as a schoolmaster. If he has it not, it is much to be desired that he should recognise his want of it, and should abandon the scholastic profession for some other where it is not equally needed. For there is no profession in which a good man may do so much harm as the scholastic. His very virtues become vices; his goodness and kindness are themselves sources of failure, unless he knows when to relax and when to tighten the rein of discipline.—Bishop Welldon in "Unwritten Laws and Ideals" (Smith, Elder & Co.).

PRACTICAL SOLID GEOMETRY.

By Professor G. B. Mathews, M.A., F.R.S

A FEW months ago a friend of mine was telling me of his delight with Monge's "Géométrie Descriptive," a second-hand copy of which he had picked up for eighteenpence. My friend is a certificated teacher, and passed with distinction the South Kensington examination in practical solid geometry; yet he confessed that until he read Monge he had no conception of descriptive geometry as a systematic theory. This illustrates very well the radical defect of English methods of dealing with this subject; it is too often presented as a mere collection of rules, without any attempt at method or co-ordination. The object of this article is to make a few suggestions towards an improvement in this state of affairs Happily the need of some change is beginning to be felt, and the appearance of Messrs. Harrison and Baxandall's treatise (reviewed in The School World for February, 1900) shows that good text-books will be forthcoming when there is a sufficient demand for them.

It is needless to say much here about the proper way of teaching the rudiments of the subject. This is, on the whole, sufficiently understood. The teaching should be exclusively oral, and of the most concrete possible kind. Elaborate apparatus is quite unnecessary. Two blackboards hinged together, or even a common music portfolio, will serve to represent the *half*-planes of plan and elevation, which are all that are required in the first instance; while any object of fairly definite shape (such as a biscuit-tin, a jam-pot, a flower-pot, a book rest) will serve for purposes of illustration It is well, also, to give sketches of plan and elevation, and ask what objects they may be taken to represent; this stimulates the power of mental construction of figures in space.

The average student will in a short time understand the general idea of the plan and elevation of a simple solid, and the foreshortening of a rectilineal segment when projected on a plane inclined to it. He will be able, with a little help, no doubt, but mainly by his own ingenuity, to solve quite a large number of elementary problems. If his exercises are properly graduated, it will not be necessary, nor is it desirable, to allow him to consult worked-out solutions. Even when such solutions are imitated on a different scale, the work is apt to be very mechanical.

Useful and interesting as this preliminary work undoubtedly is, it is a mistake to spend too much time upon it. Descriptive geometry is not an instrument of real power until its theoretical elements have been methodically studied and really mastered. For this purpose no pains should be spared in helping the student to realise that his drawing-paper represents two *complete* planes, originally at right angles, and then brought into coincidence by revolving about the ground-line. He should be carefully trained in constructing (mentally) points, lines, and planes in space from their projections and traces in a variety of positions. Above all, he should be thoroughly exercised in such primary constructions as finding the line of intersection of two planes given by their traces, and the like; and these fundamental problems should be properly emphasised, not treated as if they were co-ordinate with such trivial illustrations as drawing the plan and elevation of a regular tetrahedron.

Of course these elements of theory require time for their proper appreciation. At first it will be necessary to exhibit models (easily constructed with stiff paper or cardboard), so as to show the actual figures in space; but one of the chief aims of the teacher should be to enable the student ultimately to dispense with these aids to the imagination. It is not too much to say that a student has not properly grasped a construction until he can justify it and reason upon it *without* appealing to a concrete figure in space. The use of models is justifiable, and indeed most valuable, up to a certain point; but it is easy to carry it too far, just as it is possible, in arithmetic, to spend too much time upon the abacus.

The elementary constructions involving the point, line and plane suggest an unlimited number of illustrative exercises; the theory of parallels alone gives many useful illustrations. And when the student is really familiar with his primary constructions, he will be able to develop his powers up to the limit of his knowledge of solid geometry. The properties of the cylinder, cone and sphere, of quadric and other surfaces, the construction of their tangent-planes, the nature of their plane sections, &c., may all be demonstrated; the theoretical and practical aspects of the subject continually aiding and illustrating each other.

It may be observed that a knowledge of projective geometry is often of great assistance; for instance, in drawing lines through inaccessible points, and so on. The employment of points, &c., which are not on the paper is, by the bye, a matter of practical importance which seldom receives proper attention.

It will probably be objected that the scheme thus outlined is too ambitious and too theoretical. To this it may be answered that while the more advanced applications (*e.g.*, to quadric surfaces) may be reserved for exceptional students, the elementary theory and the ground principles of the subject should be familiar to all. Those general principles which enable us to find the traces of the plane which passes through three given points, or to find the true shape of a section of a solid by the method of "*rabattement*," are in every way more valuable than a jumble of ill-assorted rules. And although it is true that for such purposes as machine-design only a very small dose of theory is absolutely essential, still even there a more thorough knowledge of theory will be found very serviceable.

There is no doubt that this is one of the things which they manage better in France. The immortal Monge, who first raised descriptive geometry to a theory, founded a school of enthusiastic disciples, and the tradition of his methods has lasted down to the present day. All the best books on the subject are in French; it must suffice to mention the treatises of Monge (with additions by Hachette), de la Gournerie, and Mannheim. Any one of these would be a revelation to those who only know our miserable English text-books.

The main points which I wish to urge are that descriptive geometry is an organic method based upon a few elementary definitions and constructions; that these first principles should be clearly and systematically explained, and their importance insisted upon, until the pupil is quite familiar with them; and that the subject should be associated throughout with actual geometry in space, every construction being properly explained and justified. I do not propose the abolition of the ordinary type of "problem;" exercises on piles of bricks, and so on, are useful in their proper place; but merely illustrative examples of this kind should be kept in a separate and subordinate position. To put them on a level with the primary constructions is as wrong as it would be to insert a large number of worked-out "riders" in a treatise on elementary geometry, and treat them as of equal importance with the main propositions.

SOME CENTURY-ENDS.

By C. S. FEARENSIDE, M.A. (Oxon.).

THE labour of remembering to write "19—" instead of "18—" attracted a certain amount of attention at the beginning of the current year; and many persons, including members of the educated classes, shared with the German Emperor the delusion that we had begun a new century of our era, and prematurely began to assess the character of "the dead century." Such an assessing is naturally a matter of temperament. Some fixed their attention on the material progress made, and rejoiced over the mechanical improvements achieved in what has been called "The Wonderful Century"; and the self-complacency of such persons perhaps reminded us of the song which Mr. Kipling puts into the mouth of the Bandar-Log, the Monkey People:—

> "Here we sit in a branchy row
> Thinking of beautiful things we know,
> Dreaming of things that we mean to do
> All complete in a minute or two—
> Something noble, and wise and good,
> Done by merely wishing we could."

Others adopted a different tone, questioning whether the happiness or well-being of the average man had really been increased by the development of the means of making things and carrying them about quickly and cheaply. Such persons were called cynical because they refused to worship the Idols in the Market Place. Some of them made use of the expression "*fin de siècle*," a term which it would be difficult to define but which conveys a general suggestion of naughtiness. Then a Funny Man who turns out japes and jokes for the halfpenny press lays hold of this phrase and builds a jocose generalisation upon it. "Naughtiness is not confined to the end of the century; it also characterises its very beginning. You have only to write down the figures denoting the present Year of Grace, and you see at once how *very* 'naughty' it is."

The Funny Man earned his fourpence, but he also suggested some ideas which may not be without interest to such of us as are engaged in the work of teaching. There is first the etymological thought that the pun intended is not a play upon two words but upon two diverse meanings of the same word. When Browning wrote, "The evil is null—is naught, is silence implying sound," he was not merely expounding an æsthetico-philosophical theory but also noting an etymological fact. That which is "naughty," meaning wicked, is that which has nothing (naught or *nil*) in it. And this reminds one of the statement in the old history books that "the Anglo-Saxons" branded those who neglected their military duties as "nithing"—that is, nothing or worthless. Or, if we go further back, we are reminded of the Pythagorean division of things into pairs of opposites, wherein the Good, the Definite, the Positive, &c., were ranged as opposites to the Evil, the Indefinite and the Negative.

Our Funny Man also sets us off into a kind of historical inquiry. After all, the date denoted by the round numbers **1900** is more distinctive in a way than, say, a date like 1897, where all the component digits are different. Is this distinctiveness in name accompanied by a corresponding distinctiveness in fact? Are the years denoted by "round numbers" marked by the happening of many events which are generally recognised as important? And if they are so marked, do they stand out above their ninety-nine fellows in this respect? Many of us who have to struggle with the difficulties usually experienced in remembering dates—I don't know why one should remember dates any more than specific gravities, or logarithms, or "Troy Weight"—or making others remember them, would feel it comforting to be able to say, "The most notable event of a century always happens in its closing year." But as a matter of fact it does not; and when the Funny Man described the year 1900 as "naughty" he unconsciously gave us as good a label as any other to describe century-ends. In historical importance, with rare exceptions, they are "naught."

Let us look at the facts, confining ourselves to the Christian Era and drawing our information from accredited sources. I do not think that any events of first-class importance in British or European history will be found absent from the following little table.

Omitting the entries for 1900—the importance of which we are, of course, not yet in a position to appreciate at their right historical value—we may safely say that in this list there are not more than four events, taking place in century-ends, which are so important that ignorance of their happening is inexcusable in an educated man. And of these four only two possessed for contemporary observers something of the importance which they possess to our retrospective glance—viz., the coronation of the Frankish King as Roman Emperor, and the parliamentary union of the kingdoms of Great Britain and Ireland. As for the other events tabulated, they make a poorer show than similar lists referring to either —99 years or to —01 years. "Our clock," to adopt Carlyle's picturesque language, "strikes when we change from hour to hour; but no hammer in the Horologe of Time peals through the Universe when we change from Era to Era."

British History.	Year.	European History.
	800	Coronation of Charles the Great.
Accession and Marriage of Henry I.	1100	
Insurrection of Owen Glyndwr	1400	Deposition of Wenzel, King of the Romans.
	1500	Voyage of Cabral to the Brazils.
Foundation of East India Company	1600	
	1700	Second Partition Treaty. Death of Charles II. of Spain. Battle of Narva.
Passing of the Brito-Irish Act of Union. British Occupation of Malta.	1800	Revival of the Armed Neutrality of the North. Battles of Marengo and Hohenlinden.
British Occupation of Pretoria. Commonwealth of Australia Constitution Act.	1900	National Uprising in China.

You may say that the table is arbitrary, both in its admissions and in its rejections, and, of course, that is true to a certain extent; but I think you will find most of the possible additions are either of minor events or of mere approximations. For instance, a diligent search of the historical pigeonholes in your brain and of the current chronological epitomes will reveal many entries like this:—

c. 400.	English begin to settle in Britain.
c. 500.	Scots invade Caledonia.
c. 900.	Conversion of the Northmen to Christianity.
c. 1000.	Muhammadan invasion of India.
c. 1400.	Tamburlaine the Great flourishes.

This kind of entry illustrates the natural tendency to use the century-end year as a rubbish heap, on which any vague and undatable event may be thrown with impunity. The "baffled chronologer," as Freeman called him, wants to make the round numbers stand for something, but, being gravelled for lack of matter, is reduced to sheer generalities. Even the much-dreaded millennium of the Christian Era is a blank. The End of the World was expected. "Instead of which," as the Judge might have observed, "the Christian chronologer goes about stealing Muhammad of Ghazni."

Century-ends are, in fact, neither better nor worse in significance than their fellows: they look imposing, but they are barren fig-trees. I had the curiosity to put this conclusion to a statistical test. I took two standard works which happen to have chronological tables printed in them: one was Freeman's "General Sketch of European History," the other was Green's "Short History of the English People." These lists, you may be sure, were not concocted with any sinister design of defrauding century-ends of their just due. I counted up the total number of notable events set down in each work (which was troublesome), and found out (by a simple arithmetical process) how many notable events ought to happen in each year of the century. Then I counted the events assigned to —00 years, excluding mere approximations like Green's "Layamon writes the Brut. (1200)." In each case the century-end years fell below the average. The same result was obtained by the rough application of a biographical test. It is almost startling to note the unanimity with which great men (poets excepted) abstain from being born or buried in —00 years. There really is a strong *prima facie* case for maintaining the comparative insignificance of century-ends.

Emphasise the qualifying word "comparative," if you please. The *relative* insignificance of century-ends depends on comparison with other kinds of years: their *absolute* insignificance can be proved only if not a single epoch-making event chooses to happen in the last year of any century. Let it be granted at once that there are at least two events recorded in our little table the magnitude of which is sufficiently established to be more or less familiar to our dear friend, the Man in the Street. He may, indeed, think of these two events as the "accession of Charlemagne" to the "Empire of Germany," and as the "admission of Ireland" to "the English Parliament;" but so long as he is aware of the importance of the events themselves, he may be forgiven a little looseness in his terminology. We concede the point that century-ends, if not so momentous as they might be, are at least not absolutely and universally insignificant.

But is there no positive lesson to be drawn from our table of epoch-making "Events for —00?" I think there is; and it is one which involves the use of two terms which are often on our lips today, viz., "National" and "Imperial." That is, I take it, obvious with regard to the last three events set down (for 1900). But just look at the earlier entries, relating to what some folk call contemptuously "Ancient History." Think how much Henry I.'s marriage did, first to bring together the Norman-born and the English-born inhabitants of England, and secondly, to render closer the ties between Anglo-Norman England and Anglo-Keltic Scotland. The marriage was a landmark in a series of events which might have brought about the peaceable union of the two kingdoms in Britain three centuries before it took place—had not Edward I. sought to gather the fruits of suzerainty before they were ripe; even as it was, the marriage illustrates the blending together of contiguous peoples into a common nationality. Glyndwr's rising, again, is an expression of nationality; and the Act of 1800 illustrates in various ways the difficulties of really harmonising the national and the imperial ideas.

Turning to the imperial idea, see how the foundation of the "London Company of Merchants trading to the East Indies" has led us, "in a fit of absence of mind," to gather together that odd collection of paramountcies and possessions which, for lack of a better term, we call an "Empire," and how the existence of this "Empire" has first reconciled us to the term and then made most of us enamoured of the idea of "Empire." In the second column every single entry has a significance which can be best expressed in terms of Empire. The events concern the rise and fall of dominions which, correctly or popularly, are known to us as empires—Roman, Portuguese, Spanish, Swedish, Russian, French. How fast they fade away! The Swedish we have most of us forgotten; the Portuguese is known mainly to stamp-collectors; and we saw only yesterday the remnants of the Spanish disappear. The Russian, the French and the Roman we have with us; but the French empire we now call a Republic, and as for the Roman Empire, is it now represented by Rome, by Turkey, or by the Papacy? There's a pretty puzzle for the summer holidays!

It sometimes seems to me that the occasional study, on somewhat such lines as these, of the *main* events of World History would be as profitable as learning the dates "of the twelve principal battles of the Wars of the Roses." I wonder.

OBSERVATIONAL ASTRONOMY.

A SERIES OF NOTES UPON THE POSITIONS AND APPARENT MOTIONS OF CELESTIAL BODIES.

By R. A. GREGORY, F.R.A.S.
Professor of Astronomy, Queen's College, London.

I.

MODERN astronomy is so rich in discovery that there is a tendency to think it is scarcely worth while to observe the evening sky without optical aid. No greater mistake was ever made. The telescope, with its adjuncts—the photographic plate and spectroscope—has revealed many marvellous things, but nothing it can show is more impressive than a view of the sky on a fine night:

> "When in heaven the stars about the moon
> Look beautiful; when all the winds are laid,
> And every height comes out, and jutting peak
> And valley; and the immeasurable heavens
> Break open to their highest; and all the stars
> Shine, and the shepherd gladdens in his heart."

It may seem almost criminal to suggest that observational astronomy should be given a place in the already too crowded time-tables of our schools, but it is worth while to point out that a knowledge of the positions and apparent movements of the stars, sun, moon, and planets, is useful as well as inspiring. It enables a pupil to understand the movements of the earth, which cause the succession of day and night and the seasons, to know how time is measured, and its relation to longitude, and to estimate his latitude; and should he ever be so situated as to be deprived of watch or calendar or compass, he would be able to find substitutes for them in the heavens. The series of Notes which is now commenced may, therefore, be found serviceable to teachers of geography, in addition to forming a short guide to the naked-eye aspects of the heavens.

Among the subjects which will be dealt with in the Notes are those included in the syllabus of elementary astronomy prescribed for teachers who take up elementary science in the Queen's Scholarship Examination next December. A noteworthy point of the syllabus is that candidates who present themselves for the examination are expected to be trained "to notice and record the positions of the various heavenly bodies." By attaching importance to this, the Board of Education has done much to create and encourage an interest in observational astronomy. For the subject to have any educational value, however, some precision is necessary; that is to say, it is not enough merely to notice the aspects of the heavens: simple methods of recording positions upon the celestial sphere must also be understood. Before dealing with the more picturesque side of the subject, therefore, it is advisable to state and illustrate by models the measurement of angles by degrees, minutes, and seconds, and the application of angular measurement to the determination of positions of objects.

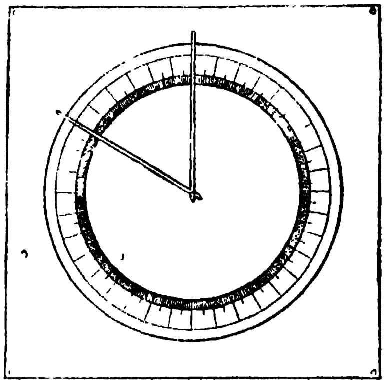


FIG. Model to illustrate angular measurement.

The Celestial Sphere.—The stars may be regarded as points fixed upon a sphere at an infinite distance from the earth. An observer in any position upon the earth is able to see one-half of the celestial sphere if he has an uninterrupted view; the other hemisphere is invisible to him at the time of observation. The hemisphere visible at any given instant depends upon the position of the observer.

Angular Measurement.—Distances and dimensions are measured upon the celestial sphere in angles, and are expressed in degrees, minutes, and seconds.

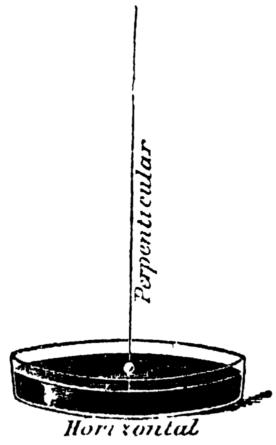


FIG. 2.

Draw a large circle upon a sheet of cardboard, and divide the circumference into 360 equal parts. Cut two narrow strips of cardboard, of a length slightly greater than the radius of the circle, and pin one end of each to the centre of the circle. (Fig. 1.) Show, by placing the strips at different inclinations to one another, the meaning of angular measurement, and the sizes of a few angles, such as 90°, 45°, 51°, 70°, &c.

Suspend a plumb-line over a shallow dish of mercury. The plumb-line is vertical, and points upwards to the zenith; the mercury surface is horizontal, and at right angles to the plumb-line. (Fig. 2)

Cut out a semi-circular piece of cardboard slightly less in diameter than the circle upon the board in Fig. 1. Divide the semi-circle into 180 equal parts or degrees. Obtain a thin, narrow strip of wood about equal in length to the diameter of the circle, and push a drawing-pin through the centre. Take the two narrow strips off the circle in Fig. 1. and put the single strip of wood in their place, the drawing-pin forming an axis at the centre. Fix the cardboard semicircle vertically upon the strip of wood, and by means of another drawing pin fasten one end of a strip of cardboard or a thin rod of wood so as to form a pointer or hand capable of being moved in a vertical plane. This simple arrangement may be used to illustrate the meaning of "altitude" and "azimuth," and to show that two co-ordinates like these determine the position of an object at any particular moment.

It is difficult to take a sight along a rod arranged upon a semicircle in the manner described, but very little ingenuity is required to construct an apparatus by means of which altitudes and azimuths can be roughly measured. For instance, a simple instrument can be made as follows:—Obtain a shallow wooden box about a foot square, and a rod of wood about an inch in diameter and a foot in length. At the centre of the cover of the box bore a hole slightly greater in diameter than the rod of wood. Through the bottom of the box hammer a wire nail, so that it stands vertically pointing to the centre of the hole made in the cover. Bore a hole at the centre of one end of the rod, so that the rod will fit upon the nail. The rod can thus turn on the nail as a vertical axis when it is pushed through the hole in the top of the box. (Fig. 3.)

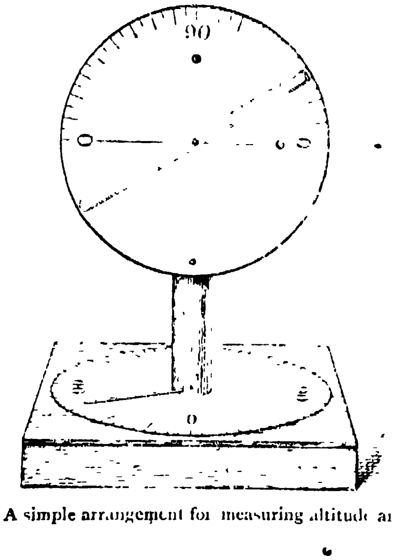


FIG. 3.—A simple arrangement for measuring altitude and azimuth.

Cut a hole, slightly greater than the diameter of the rod, in the centre of a cardboard circle divided into degrees. Fasten the circle upon the top of the box. Push a knitting-needle into the rod, so that it lies upon the horizontal circle in the direction of a radius of the circle. The needle will serve as a pointer to indicate the azimuth upon the horizontal circle. Divide half of a second circle into degrees, and fix it upon the rod vertically, with the diameter connecting the end divisions horizontal, and the divided semicircle above it. Obtain a narrow tube of cardboard or a thin rod of wood. Push a wire nail across the middle and into the rod at the centre of the vertical circle. The altitude of an object will be shown by means of the vertical circle, the divisions of which should be numbered from 0 to 90 in each of the upper quadrants, the division 90 being at the top.

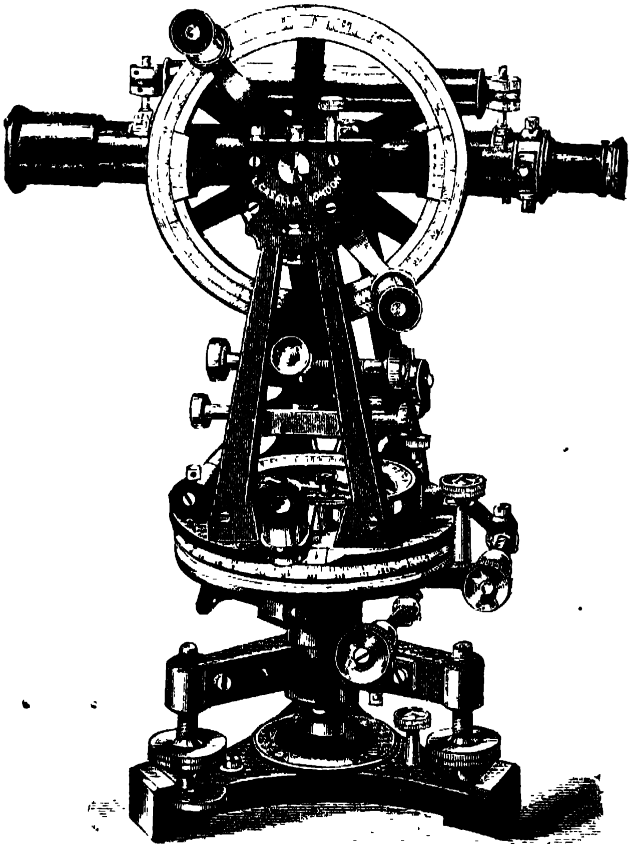


FIG. 4.—The Theodolite, for measuring altitude and azimuth.

Arrange the apparatus so that the 0 of the horizontal circle is due south and the knitting needle points to 0. Turn the rod until some distinct object on the wall or ceiling of the room can be sighted through the tube or along the thin rod on the vertical circle. Notice the number of degrees the knitting needle pointer has moved from the 0 or south point. (This shows the azimuth of the object observed.) Notice also the number of degrees between the horizontal diameter of the vertical circle and the direction of the sighting tube or rod. (This shows the altitude of the object.) Determine the positions of several objects in the same way, writing down the altitude and azimuth of each thus:—

Object.	Azimuth	Altitude.
Spot on wall	53°	67°
Window fastener	130°	74°
Ventilator	90°	83°

Now reverse the operations by arranging the apparatus so that the sighting-tube or rod has the altitude and azimuth previously measured for one of the objects. It will thus be found that the position of a fixed object can be determined when the altitude and azimuth are known. It is a good exercise to write down the altitudes and azimuths of several objects and let some one else determine the objects by setting the sighting tube or rod in the position indicated by the numbers and looking along it.

Measurement of Altitude and Azimuth.—From the foregoing it will be understood that the position of a celestial object at any distance may be defined by the altitude and azimuth system of co-ordinates. An instrument often used to determine these co-ordinates is shown in Fig. 4. By means of spirit levels and the screws at its base the instrument can be set horizontally. The telescope moves in a vertical plane round the vertical circle in the illustration. Attached to it are two small portions of a divided circle which, when the telescope moves, slide round the fixed vertical circle and so serve as pointers. The angle which the telescope makes with the horizontal plane can be read off in degrees, minutes, and seconds, on the vertical graduated circle, and measures the altitude of the object which is being viewed by the telescope. The telescope being now clamped in position, it is possible to move the whole framework supporting it round in a horizontal plane, and the angle through which it must thus be moved from the south point measures the azimuth. It should be borne in mind that when bodies are moving there is a continual change of altitude and azimuth.

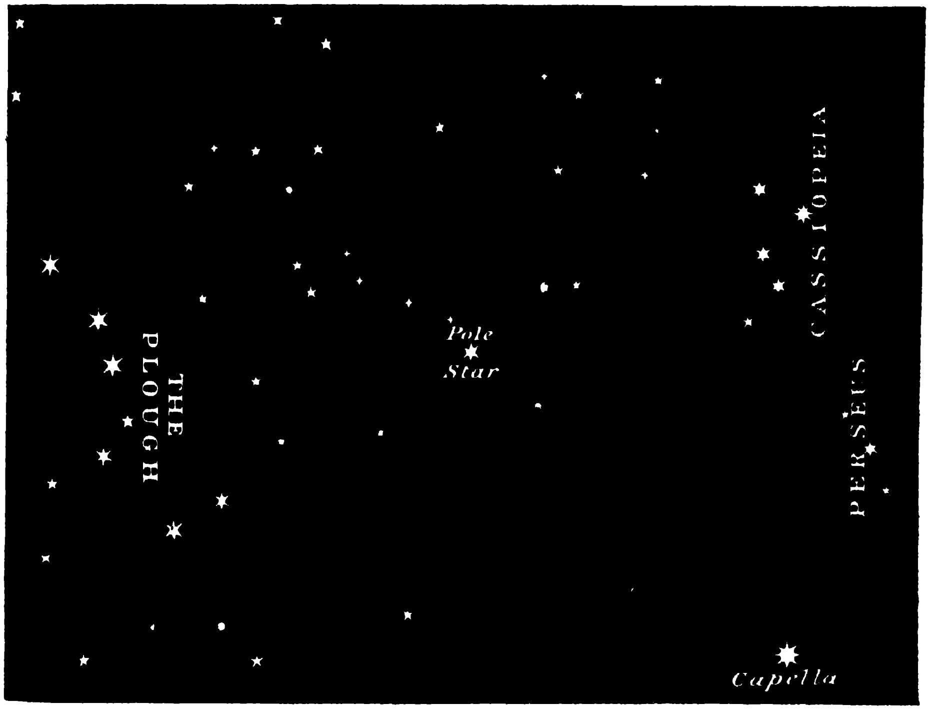


FIG. 5.—Conspicuous groups of stars seen in the northern sky.

The Northern Sky.—It is now possible to follow with interest a description of the positions and apparent motions of the stars. The Great Bear constellation, or star-group, is always visible in England on a fine night, and is, therefore, a useful starting-point. The seven stars which form a large part of the Bear are easily recognised when looking towards the north. They are often called "Charles's Wain," "The Plough," or "The Dipper." The two stars most distant from the curved tail serve to indicate the position of a star which should be familiar to everyone. They are known as "The Pointers," because a line connecting them points very nearly to the Pole Star or North Star. (Fig. 5.) Not far from the Pole Star can be seen two other fairly bright stars, known as the "Guards of the Pole," and belonging to the Little Bear (Ursa Minor).

After the Great Bear, the next most conspicuous group in the northern sky belongs to the constellation of Cassiopeia. The chief stars form a broadened W, known as Cassiopeia's Chair, the top of the W being directed towards the Pole. A line from the last star in the tail of the Great Bear, if carried through the Pole Star and continued for the same distance on the other side, leads to Cassiopeia.

Between the Great Bear and the "Guards," and extending round to Cassiopeia, are the constellations Draco (the Dragon) and Cepheus, neither of which is distinguished by very distinct configurations of stars.

Measure the altitude of the Pole Star as accurately as possible with the means at your disposal. Observe the positions of the Great Bear and Cassiopeia after an interval of two or three hours, and, if possible, again after the lapse of a similar interval of time. You will notice that the stars will appear to have rotated as a whole in the opposite direction to that in which the hands of a watch move. The position of the Pole Star, however, remains practically constant.

SUBJECTS FOR CONSIDERATION AND DESCRIPTION.

(1) It is often said that all the stars appear to move from east to west. Is this strictly true? What observations would you suggest to test it?

(2) When looking at a certain group of stars one evening, after an interval of three hours, I noticed that they had apparently moved towards the east, while another group had moved towards the west. In what direction was I looking, and how were the groups of stars situated with reference to the Pole Star?

(3) Explain the lines:

> "Constant as the northern star,
> Of whose true-fix'd and resting quality
> There is no fellow in the firmament."

(4) Sketch the positions of the stars referred to in the following lines from "Othello":—

> "Seem to cast water on the burning Bear,
> And quench the Guards of the ever fixed Pole."

(5) What particular star is referred to in the following lines:—

> "Whose light, among so many lights,
> Was like that star, on starry nights,
> The seaman singles from the sky
> To steer his bark for ever by."

How is it possible to steer a ship by means of a star?

(6) The idea conveyed by the following lines is not exactly correct. Point out the inaccuracy.

> "As still to the star of his courtship, though clouded,
> The needle points faithfully o'er the dim sea."

(7) Vergil, as rendered by Dryden, says

> "Around our Pole the spiry Dragon glides,
> And like a wandering stream the Bears divides."

Comment upon these lines.

(8) Is it sufficient to determine the altitude and azimuth of a celestial body in order to locate its position? If not, what other observation should be made?

(9) Explain the meaning of *zenith*, *altitude* and *azimuth*.

(10) Describe clearly how angles are measured, and how you would determine roughly the altitude and azimuth of a celestial object.

(11) Make a sketch, showing the relative positions of The Plough, Cassiopeia's Chair, the Guards and the Pole Star.

(12) Observing in London, a certain star was found to have an altitude of about 51° and an azimuth of 180°. Are these measures sufficient to enable a person to know what star was observed? If so, give the name of the star.

THE SOCIAL STATUS OF WOMEN SCHOOL-TEACHERS.

By CAMILLA JEBB.

WHEN girls' high schools were first established, between twenty and thirty years ago, it will be remembered that they were eagerly welcomed as placing the profession of teaching for women on a far higher footing than it had hitherto occupied. At last, it was said, a lady could adopt that profession without incurring the social stigma hitherto attaching to it. In those early days of the movement, most high-school mistresses would have been more than a little offended if ranked in the same category with private governesses. The old tradition concerning these last-named functionaries had still much power over the minds of the majority.

That tradition is now happily losing its hold, and the distinction between different branches of the profession is consequently far less strongly marked. The status of teachers in families and private schools has risen considerably, and there is every indication that it will continue to rise. We have classed private schools and families together advisedly, because, rightly or wrongly, a private school was never in old times supposed to confer any social *prestige* on those employed in it. In fact, the mistresses in private academies (and, of course, there were practically no other schools for girls before the date above-mentioned) would seem, if possible, to have taken a lower rank than governesses in families. The sprightly heroine of Jane Austen's "Emma" apparently regarded the position of private governesses as one of extreme misery and degradation, but still sometimes filled by a gentlewoman. Whereas "school teacher" was in her eyes a proverbial term for coarseness and ill-breeding; Lucy Snow had to make quite as heroic an effort in confessing her connection with Mme. Beck's flourishing institution for young ladies as Jane Eyre made when she announced "I am the governess." Even the head of a girls' school was not much accounted of, unless she could prove that she had seen better days.

The admirable wisdom which our ancestors manifested on this point was not, as in the case of some professions, exercised for the benefit of female workers only. Schoolmasters did not fare much better. The usher was as general an object of derision and ill-usage as is the *pion* in modern France. And "usher" seems, as far as can be made out, to have been a generic term, including, as a rule, all but the head, or possibly the second master. At the half-dozen great public schools things may have been somewhat better. Yet, even in this century, we find Dr. Arnold, of Rugby, stating that he could not advise any young man to adopt the scholastic profession without taking orders. A schoolmaster, he says, in effect, does not, *qua* schoolmaster, rank as a gentleman. The title of "reverend" is needed to procure him sufficient social consideration for his own comfort.

Arnold here reveals an interesting aspect of the question, and one not very familiar at the present day. For, though the preference for clerical over lay schoolmasters is not yet quite extinct, it is generally supposed to be based upon moral and religious rather than social considerations. We may compare the conditions of female education in France during the last two or three centuries. Up to the Revolution, and even for some time after it, the instruction of better-class girls was practically monopolised by the teaching orders of nuns, who in right of their semi-clerical character enjoyed a high degree of consideration. Women descended from the greatest families in the land did not, if belonging to one of these sisterhoods, disdain the duties of class-teacher. The convent schools were important institutions, and the ladies who presided over them were considered very distinguished personages indeed. No such combination of the religious with the scholastic vocation was possible for women in Protestant England. Hence the English schoolmistress was at a great disadvantage compared with her French sister. As a set-off, we must remember that, though poverty, celibacy, and obedience might often enough be her life-long portion, she was not bound to renounce all hope of ever escaping from them, at the very beginning of her career.

An interesting little episode in the educational history of France is the abortive attempt made more than two centuries ago by Madame de Maintenon to introduce a new class of female school-teacher. The scene of this intended reform was, of course, her celebrated charity-school at St. Cyr. This once famous institution scarcely receives in modern times the recognition which it deserves. It was planned not only in a spirit of princely munificence, but, in many respects, with singular wideness of view. Two hundred and fifty girls of good family, rescued most of them from the direst poverty, were educated by the large resident staff (afterwards augmented) of thirty-six mistresses. The pupils remained till they were twenty, which must have been unusually late in those days. On leaving, they were started in a profession, according to their choice. It was not a very wide choice certainly, being limited to two alternatives. If a girl wished to marry, she received a dowry of three thousand francs (worth considerably more than the same sum now), and, in addition, some Government post was generally conferred on her husband. Young ladies preferring the religious life were placed in certain convents to which the king possessed a right of nominating sisters without any payment.

There is something distinctly up-to-date in the principle of these last regulations, though scarcely in the method of carrying them into practice. The organisation of the teaching staff is, as has been already intimated, no less marked by originality. The teachers were bound by no perpetual vows. They were to practise no austerities (Madame de Maintenon held the sensible view that a hair shirt was scarcely a desirable bosom companion for anybody whose first duty should be to keep her temper). They were to bear the title of Ladies of St. Louis, in allusion, of course, to their royal patron, the Grand Monarque. A special costume, most effectively combining the artistic with the conventual, was devised for them. They were so far like nuns that they received only a maintenance, and no money salary in return for their labours, but were not incapable of holding private property. Their social standing was very high indeed, as they were special *protégées* of the King and the virtual Queen of France. It was provided that all vacancies occurring in the staff were to be filled from the ranks of former pupils, those being selected who showed most aptitude for teaching. This regulation made it impossible for any but women of noble family to become mistresses, as no others were received at St. Cyr. The ladies of St. Louis were supposed to live in voluntary seclusion from the world, but considering that St. Cyr was only a quarter of a league from Versailles, and that both Louis and Madame de Maintenon set the fashion of continual visits there, it seems morally certain that the seclusion must have had some interruptions. We know, at any rate, that one or more of the mistresses took part in those famous representations of Racine's "Esther" which all the Court eagerly crowded to admire.

If the system of secular mistresses had once become firmly established at St. Cyr, so august an example would doubtless have been widely imitated. The results could scarcely have been otherwise than most beneficial. A healthier and more liberal tone must have been imparted to female education, and a third reputable profession, besides marriage and the veil, would have been opened to gentlewomen. Unfortunately, times were not ripe for such a measure of reform, and it was very soon abandoned. St. Cyr was established in 1686, and by 1694 the whole staff were bound by perpetual vows and affiliated to one of the old monastic orders.

The reasons assigned for this momentous change seem remarkably inadequate. Some Ladies of St. Louis had grown tired of St. Cyr, and wished to return to the world. It was suggested that this example might be followed to such an extent as to leave all the classes teacherless! Then, it was urged that a spirit of worldliness was likely to infect a community not restrained by strict religious discipline. Moreover, a secular school would stand a worse chance than a convent of preserving its endowments in the future. Louis, to do him justice, was not influenced by these arguments. With all his devoutness, he had no liking for convents. But Madame de Maintenon differed from him in this particular, and allowed herself to be persuaded that the change was desirable. The Ladies of St. Louis for the most part thought otherwise, and naturally made some degree of resistance. But it was a case of arguing with the master of ten thousand legions, and these poor girls (as most of them were) reluctantly submitted. On one question only they stood firm. They would not adopt the ordinary conventual garb, but insisted on retaining their own more becoming costume. This point was conceded, and they gave way on all the rest—a pathetic touch of satire upon the Eternal Feminine!

Such was the end of this remarkable project. A most remarkable one it certainly was, considering all the circumstances. That such an innovation should have been attempted at all in seventeenth-century France is far more a matter for astonishment than that it was so soon relinquished, and Madame de Maintenon deserves admiration for originating so sweeping a reform, though she lacked the moral courage to persist in it.

I HAVE often thought it one of the most barbarous customs in the world, considering us a civilised and a Christian country, that we deny the advantages of learning to women. Their youth is spent to teach them to stitch and sew and make baubles; they are taught to read, indeed, and perhaps to write their names or so, and that is the height of women's education."—Daniel Defoe, 1697.

PRACTICAL WORK IN PHYSICAL GEOGRAPHY.

Experiments and Observations for the new Schedule of the Cambridge Junior Local Examination.

By Dr. A. J. Herbertson, F.R.G.S.

I.

THE new schedule in physical geography for the Cambridge Local Examinations recommends a course of practical work (1) to develop the power and habit of observation, (2) to give the pupils clear and accurate conceptions of natural phenomena and their relations, and (3) to enable them to seek for the causes and rational explanations of the phenomena which they observe. This and four other articles will suggest a series of practical exercises suitable for pupils working for the Junior Certificate. The writer will be glad of any suggestions for modifications from teachers who try to carry them out in whole or in part.

(1) Every sunny day near noon observe the shadow either of some post in the playground and note where it is shortest, or, what is perhaps more convenient, the shadow of the window sill on the floor of a south-facing room; when this shadow is shortest, mark the point where the shadow of one corner of the window falls on the floor, and draw a line from this point along the floor to a point immediately below the corner of the window. This line NS lies north and south, the north point projecting into the room. Draw a line at right angles across this line. The four directions, north, south, east and west, are thus determined.

(2) Measure the length of the north and south line drawn as described in (1), every week or two, and enter the result in a book. Compare the gradual variations in the length of the line, and note the dates when it is (*a*) longest, (*b*) shortest.

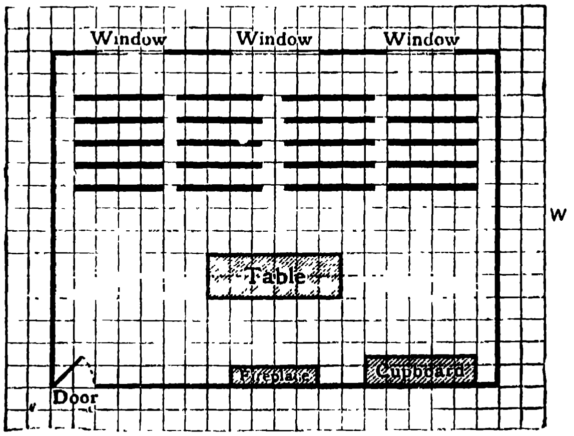
(3) Measure the size of the room, the size of the openings in the walls, and their distance from one end of it. Also measure the position and dimensions of different articles of furniture in the room. To keep a record of this draw a rough sketch of room showing the openings, and the furniture, and mark the sizes measured at the corresponding parts of the sketch. The next exercise is to draw this sketch to scale.

(4) Suppose it is intended to make a plan of the room on a scale of $\frac{1}{24}$ of the real size, *i.e.*, ½ inch represents 1 foot. First of all draw a straight line not far from lower edge of a sheet of paper and measure off say 10½ inches. (The number of inches would be determined by the length of the longest side of the room divided by 24.) Divide it into half-inches by drawing cross lines, and divide the left-hand division into four parts, each of which will represent ¼ foot or 3 inches. Number the parts of this left-hand division 12, 9, 6 and 3 inches, beginning at the left. Mark the next line 0, the succeeding one 1, and so on up to 10. Put "scale of" at the left-hand side of the line and "feet" at the right-hand side. Beneath the scale write "scale of $\frac{1}{24}$ or ½ inch = 1 foot."

(5) The scale being drawn at the foot of the paper, begin by making a line with a T square close above it, $\frac{1}{24}$ the length of the room. (If it is 20 feet long, this line will be $\frac{1}{24}$ of 20 feet or 10 inches.) From its extremities draw, using a set square, two lines at right angles $\frac{1}{24}$ of the width of the room. (If it is 15 feet wide, these lines will be 7½ inches long.) Join the ends of these two lines to represent the fourth side. The openings should now be shown, the distance of each and its width being measured on the paper $\frac{1}{24}$ of the real dimensions. If the first window on the south wall be 2 feet from the west end and be 3 feet wide, then the opening is shown on the plan to begin at 1 inch from the west end of the corresponding line, and to be 1½ inches wide. The opening can best be shown by rubbing out the pencil line and drawing a short line outwards, *i.e.*, towards the south, at right angles to the wall at each end of the opening.

(6) To orient the plan put it over the north and south lines on the floor, so that the line representing the south side of the room lies parallel to the south wall. Draw a line on the plan, while in this position, *along* or *parallel to* the north and south line on floor. This line represents on the map the north and south line. Put an arrow head at the end of the line farthest away from the south wall to indicate the north.

(7) The size of the desks, tables, seats and cupboards in the room should be measured, and their distance from two walls. Divide these measurements by 24 and measure off, and draw in on the plan. Note: paper ruled in squares may be used. This will make the drawing easier for junior pupils.



The accompanying plan will show how this ruled paper can be utilised.

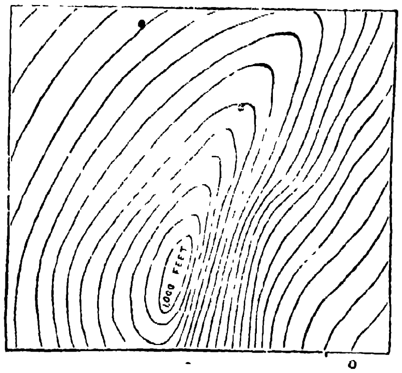
(8) Measure the height of the ceiling and the heights of doors, windows and fireplace. Make a plan or "elevation" of each wall to the same scale as the plan of the floor.

(9) Measure the height of the different pieces of furniture in the room. Make a "section" across the middle of the room, showing the furniture as well as either (*a*) the north and south walls, or (*b*)

the east and west walls. Where there is time, it may be well to begin with making a plan, four elevations and two sections at right angles to each other of either the master's or the pupils' desks, a cupboard, or other simple article of furniture.

(10) Pass to the study of the 6-inch ordnance map of the neighbourhood (25-inch map in the towns). Show how it may be oriented from the north or south line obtained by the shortest shadow of a pole in the playground, or from a magnetic needle, when the variation is known. Identify all the markings on the map with the actual objects they represent. Set the pupils to read a similar map of a region they have not seen. Do the same with the 1-inch contour map. Use either the maps with dark hill-shading and contours, or else those with red contour lines and light hill-shading.

(11) Explain the meaning of contour lines. They may be regarded as the shore lines which would exist were the sea to rise to their level. In the accompanying figure contour lines are drawn every 50 feet. The sea level is represented by the line nearest right-hand bottom corner. Were the sea to rise 50 feet it would be hidden, and the line above it would be the shore line. Were the sea to rise 1,000 feet, only a small oval area would remain dry land. Take either the one-inch-to-the-mile ordnance survey map with red contours, or Bartholomew's ½-inch-to-the-mile contour map of the school district. Draw a line across the map passing through a hill and across a valley. Draw on a sheet of paper a line of the same length. Measure the distance of each contour line on the map from one end of the line, and from one end of the line on paper make a series of points at similar distances, and number each with the heights of the contour line. Draw vertical lines through these points, and if possible on the same scale as the horizontal line (1 or ½ inch to mile). If this be too small, twice, three or more times that scale. Measure along them a length corresponding to the height of the contour line. Join the ends of these lines thus fixed. The broken line obtained will represent the section of the surface of the ground. Sections may be made across a ridge or valley at different points, and compared together.



(12) To map the valley curve note where each contour line crosses the river, and measure the distance of the first contour from the source along the bed of the river, omitting windings in the first place. Measure a similar length from the end of a line drawn on paper and mark height of contour. Measure next on the map the distance between the highest contour and that immediately below it, and then set off a similar distance along the line on the paper, and mark the height of this contour line above it. Do this for the still lower contour lines until the valley curve is complete from source to sea.

THE FIRST, CONSULTATIVE COMMITTEE.

The Draft of an Order in Council constituting the first Consultative Committee of the Board of Education has been issued as a Parliamentary Paper. It is worth while to recapitulate the duties which the Committee will be called upon to perform. These are, briefly, first, to frame, with the approval of the Board of Education, regulations for a register of teachers which is to be formed and kept in a manner to be provided by Order in Council, and, secondly, to advise the Board of Education on any matter referred to the Committee by the Board.

According to the Board of Education Act, the Committee was to include not less than two-thirds of persons qualified to represent the views of universities and other bodies interested in education, and this instruction has been interpreted very liberally, for, with the exception of the two former vice-presidents of the Council, all the persons in the list come under this head. The Committee is thus representative so far as institutions and professional bodies are concerned, but it is singularly deficient in persons who are familiar with the educational methods and systems of various countries, and are therefore able to take a broad view of our educational responsibilities. As at present constituted, the Committee does not include a single person who has devoted close attention to education as a whole. In our opinion this is very unsatisfactory, and might with advantage be remedied before the Committee meets in October. A committee consisting almost entirely of representatives of sectional interests has no coherence, and can therefore have no stability. To ensure a sound policy, which will command the respect of everyone interested in educational progress, two or three persons who have had the time and opportunity to examine the work of schools of various grades in different countries, and to seriously study educational questions from many points of view, should be members of the Committee. Why such educational experts have been overlooked, though their knowledge is precisely that required by the Committee, passes comprehension.

The full text of the Order constituting the Committee is as follows:—

1.—(1) There shall be established a Consultative Committee of the Board of Education consisting of eighteen members.

(2) The following persons shall be the first members of the Committee:—Rt. Hon. Arthur Herbert Dyke Acland; Sir William Reynell Anson, Bart., M.P.; Professor Henry Armstrong; Mrs. Sophie Bryant; Rt. Hon. Sir William Hart Dyke, Bart., M.P.; Sir Michael Foster, K.C.B., M.P.; Mr. James Gow, Litt.D.; Mr. Ernest Gray, M.P.; Mr. Henry Hobhouse, M.P.; Mr. Arthur Charles Humphreys-Owen, M.P.; Sir Richard Claverhouse Jebb, M.P.; Hon. and Rev. Edward Lyttelton; Very Rev. Edward Craig Maclure, D.D., Dean of Manchester; Miss Lydia Manley; the Venerable Ernest Grey Sandford, Archdeacon of Exeter; Mrs. Eleanor Mildred Sidgwick; Professor Bertram Coghill Alan Windle, M.D.; Rev. David James Waller, D.D.

2.—(1) Subject to the provisions of this Order as to the retirement of the first members of the Committee, the term of office of a member of the Committee shall be six years.

(2) On the *first day of October* in every second year six members of the Committee shall go out of office and their places shall be filled by such persons as the President of the Board of Education appoints.

(3) A person going out of office may be reappointed.

3.—(1) The Committee shall elect a chairman, who shall hold office until the next day for the retirement of members of the Committee, but, if he continues to be, or is reappointed, a member of the Committee, he may be re-elected chairman:

Provided that if during his term of office the chairman ceases to be a member of the Committee, the Committee shall elect a new chairman.

(2) The chairman shall preside at every meeting of the Committee at which he is present.

4. Such person as the President of the Board of Education appoints shall be the secretary to the Committee and shall hold office during the pleasure of the President of that Board.

5.—(1) The Committee shall meet at such times, and notice of meetings shall be given to the members of the Committee in such manner as the President of the Board of Education appoints.

(2) At a meeting of the Committee, six shall be a quorum.

(3) Subject to the provisions of this Order, the Committee may regulate their own procedure.

(4) No act or proceeding of the Committee shall be questioned on account of any vacancy in their body.

6. The President of the Board of Education may for special purposes appoint sub-committees of the Committee, and any sub-committee so appointed may, within the limits authorised by the President, add to their number persons not being members of the Committee.

7. If a member of the Committee is absent from two consecutive meetings of the Committee, except for some reason approved by the President of the Board of Education, his office shall become vacant.

8. On a casual vacancy occurring in the Committee by reason of the death, resignation, or absence of a member, the President of the Board of Education shall appoint another person in his place, and the person so appointed shall hold office until the time when the person in whose place he is appointed would regularly have gone out of office, and shall then go out of office.

9. In making appointments under this Order the President of the Board of Education shall have regard to the requirements of the Board of Education Act, 1899, that the Committee shall consist, as to not less than two thirds, of persons qualified to represent the views of universities and other bodies interested in education.

10. The President of the Board of Education may fix the times of retirement of the members of the Committee appointed by this Order so that six of them shall retire on the first day of October one thousand nine hundred and two, six on the first day of October one thousand nine hundred and four, and six on the first day of October one thousand nine hundred and six.

11. The Interpretation Act, 1889, applies for the purpose of the interpretation of this Order as it applies for the interpretation of an Act of Parliament.

12. This Order may be cited as the Board of Education (Consultative Committee) Order in Council, 1900, and shall come into operation *on the first day of October one thousand nine hundred.*

THE EDUCATION BILL, 1900.

THE second reading of the Bill introduced into the House of Lords by the Duke of Devonshire has not, as we go to press, been reached, and we are consequently unable to benefit by the detailed explanations promised by the Lord President of the Council in his speech on the occasion of the first reading. But the general purport of the Bill was made sufficiently clear by the following remarks made in introducing the measure:—

The Bill is based on foundations that already exist, and, indeed, it contains very little beyond the proposals which were contained in the Bill of 1896, so far as that Bill related to secondary education. Local authorities already exist under the Technical Instruction Act of 1889 and the Local Taxation Act of 1890 with limited powers of aiding and supervising technical and manual instruction as a part of secondary education. The old authorities are county councils, county borough councils, the councils of non-county boroughs, and urban district councils. The resources which they possess are the proceeds of a 1d. rate and the sum derived from the local taxation account, which now amounts to over £800,000 a year. The county councils and the county boroughs are alone the recipients of the sums derived from the local taxation fund. This Bill proposes to extend these existing foundations. In the first place, it will make the application of the local taxation money to educational purposes compulsory, instead of optional, as it is at present. It will enable the authority to apply both that fund and the rates to the purposes of secondary education generally, not limited to technical or manual instruction. It will, however, require that this shall only be done after adequate provision has been made for technical instruction; and, in order not to bring about any sudden change in the work that has already been going on, the authorities will be instructed to have regard to the existing application of the funds to educational purposes. It has been necessary to decide to what authorities acting in what areas the extended powers are to be given. It is proposed to follow the precedent of the Local Taxation Act, 1890, of the Bill of 1896, and the recommendations of the Royal Commission on Secondary Education, and to entrust these extended powers to county councils and county borough councils, only leaving to the minor authorities the powers which they already enjoy of giving technical instruction. There is nothing in this provision that will prevent the constitution of authorities for other areas, either greater or smaller, if convenient for educational purposes.

The Bill proposes to constitute the Education Committees which already exist upon a more formal basis. Suggestions have been made that provision ought to be made in the Bill for the representation on these educational committees of the councils of non-county boroughs and of urban districts, and that the Bill should contain provisions for the representation on the education committees of school boards or other educational interests within the area. The circumstances of the different districts in the country are, however, so various that to include any provisions of this kind in the Bill which would be applicable alike to all parts of the country would be impracticable, and we thought the difficulty might be better solved by providing that these education committees shall be framed by schemes to be submitted to and approved by the Board of Education. The schemes may provide for the institution of joint committees for areas in more than one county or county borough, or, on the other hand, by the words which are inserted in the Bill, "or any part thereof," it is intended to indicate that, either by means of sub-committees or otherwise, provision may be made for the management of any smaller area than that of a county or county borough. Under the existing law county councils and urban authorities have each the power to levy a 1d. rate, and it follows that in some districts which are subject to each authority a rate of 2d. may at present be levied for the purposes of technical instruction. The Bill will propose to raise the rating limit to 2d. in all cases, but in no case shall the rate levied by the county and by the local authority combined exceed that amount.

The following is the full text of the Bill:—

Application and Administration of Residue.

1.—(1) So much of the residue under Section I. of the Local Taxation (Customs and Excise) Act, 1890, as is paid to any county or borough fund shall be applied for the purposes of education, and shall, after adequate provision has been made for technical and manual instruction, and subject to the like conditions and restrictions as are imposed by the Technical Instruction Act, 1889, as amended by this Act, with respect to the aid thereby authorised, be applicable to the purposes of any other form of education.

(2) The money so applied shall be administered by the council of the county or borough through an education committee of the council constituted in accordance with a scheme made by the council and approved by the Board of Education.

(3) Every such scheme may provide for including in the education committee persons, male or female, who are not members of the council.

(4) The education committee of a council shall not raise money by loan or by rate, and shall not spend any money beyond the sum allowed by the council.

(5) A scheme made under this section may provide for a joint education committee of two or more councils, and may make such other provisions, including provisions with respect to the powers and duties of the committee, and its relation to the council or councils by which it is appointed, as may appear necessary or expedient for carrying this Act into effect within the county or borough, or any part thereof.

(6) If the Board of Education approve any such scheme without modification, or with any modifications agreed to by the council, the scheme shall have effect as if enacted by this Act, but shall be subject to revocation or alteration by a scheme made in like manner.

(7) If the council do not submit a scheme within twelve months after the passing of this Act, or within such further time as may be allowed by a special order of the Board of Education, or if the council have, at the expiration of twelve months after submitting a scheme, failed to agree with the Board of Education as to any modification suggested by the Board, that Board may make a scheme which shall have effect as if made by the council and approved by the Board.

Extension of Purposes of Technical Instruction Acts.

2.—(1) Money raised by a rate under the Technical Instruction Acts, 1889 and 1891, shall, after adequate provision has been made for technical and manual instruction, and subject to the like conditions and restrictions as are imposed by the Technical Instruction Act, 1889, as amended by this Act, with respect to the aid thereby authorised, be applicable to the purposes of any other form of education.

(2) Where money is so raised by a council of a county or county borough, it shall be administered through an education committee established under this Act.

(3) The amount of the rate to be raised in any one year by a local authority for the purposes of the Technical Instruction Acts, 1889 and 1891, and this Act shall not exceed the sum of 2d. in the £1, and the rate levied under those Acts by the council of a borough or urban district shall not, when combined with the rate levied thereunder by the council of a county, exceed the said limit.

(4) Paragraph (*g*) of Section 1 of the Technical Instruction Act, 1889, is hereby repealed.

Provisions as to Aid.

3.—(1) A school shall not be deemed to be aided within the meaning of the Technical Instruction Acts, 1889 and 1891, and this Act, by reason only that—

(*a*) any scholarship or exhibition granted or supplemented under any of the said Acts is held at that school; or

(*b*) the use of any museum, laboratory, workshop, or apparatus established, or maintained, or equipped wholly or in part under any of the said Acts, or the instruction given by any technical or scientific instructor paid wholly or in part under any of the said Acts, is available to scholars of the school equally with other students.

(2) A council in the performance of their duties with respect to education shall not give any preference or advantage to any school on the ground that it does or does not belong to, or is or is not in connection with, or under the management of, any particular church, sect, or denomination, or that religious instruction is or is not given in the school.

Provided that aid shall not be given under this Act to any school in respect of religious instruction, and for the purposes of this Act this restriction shall be substituted for the restriction imposed by paragraph (*c*) of Section 1 of the Technical Instruction Act, 1889.

(3) Notwithstanding the proviso to paragraph (*f*) of Section 1 of the Technical Instruction Act, 1889, aid may be given to a school conducted for private profit to such extent and under such conditions as the Board of Education may, having regard to the special circumstances of the case, think expedient.

(4) For the purpose of determining the restrictions and conditions imposed by this Act, Section 1 of the Technical Instruction Act, 1889, shall be construed as if—

(*a*) references to aid out of the local rate were references to aid out of any fund or rate applicable to education under this Act; and

(*b*) references to technical and manual instruction were references to any form of education which is aided under this Act; and

(*c*) references to the Technical Instruction Act, 1889, and to Section 1 thereof were references to this Act.

Duties of Councils.

4. (1) Every council shall make such reports and returns and give such information to the Board of Education with respect to their proceedings under the Technical Instruction Acts, 1889 and 1891, and this Act as that Board may require.

(2) Every council shall, in the exercise of their powers of establishing and aiding schools under the said Acts, have regard to the existing supply of efficient schools and to the existing application of money applicable to purposes of education.

Appeal against Action of Local Authority.

5.—(1) If the governing body of any school feel aggrieved by the action of any council on the ground that it operates unequally or unfairly with respect to the school, or is otherwise prejudicial to the school, they may complain to the Board of Education, and that Board, after communicating with the council, shall determine the matter, and the council shall comply with any order made by the Board of Education for removing the ground of the complaint.

(2) For the purposes of this section the expression "governing body" shall include any corporation, trustees, or other persons managing a school.

Saving for Certain Schools.

6.—Nothing in this Act shall affect any certified industrial, day industrial or reformatory school, or any poor law school.

Application to Wales and Monmouthshire.

7.—In the application of this Act to Wales and Monmouthshire, the county governing body under the Welsh Intermediate Education Act, 1889, shall take the place of the education committee under this Act.

Short Title, Extent, and Commencement.

8.—(1) This Act may be cited as the Education Act, 1900.
(2) It shall not extend to Scotland or Ireland.
(3) It shall come into operation on April 1st, 1901.

EDUCATIONAL FEDERATION.

A SERIOUS, and what appears likely to be a successful, attempt is being made to establish a Federal Educational Council, to include accredited representatives of all existing educational bodies, together with other educationists who, whether in connection with established organisations or otherwise, are striving for the advancement of English education. It is believed that such a Council, possessing as it would the confidence of workers in every department of the complex whole which constitutes our national education, would be able to express the united opinion of the country in public resolutions, and, if thought desirable, of pressing such resolutions upon the attention of all authorities responsible for the administration of education, in whatever form.

With these objects in view, a preliminary conference was held at the College of Preceptors on June 30th, at which most of the existing educational societies and associations were represented. The meeting was convened by means of a circular which was sent to all well-known educationists. The names of the convening committee are sufficient evidence of the widespread desire which exists for some such attempt at the co-ordination and unification of the numerous, more or less isolated, attempts to rationalise and codify the many grades of education. The circular was signed by the following :—

Dorothea Beale.
H. Courthope Bowen.
Sophie Bryant.
Elsie Day.
H. W. Eve.
Wm. Garnett.
H. Frank Heath.
William K. Hill (*Hon. Sec.*).
J. Lewis Paton.
A. T. Pollard.
G. H. Rendall.
Francis Storr.
Foster Watson.
J. H. Yoxall.

The meeting was presided over by Mr. Arthur Sidgwick, M.A., who in a few words described the objects of the conference. Mr. W. K. Hill then detailed the steps which had resulted in bringing the audience together, and proceeded to enumerate the numerous expressions of approval which had reached him from different sources, and to answer some of the objections he had received. The following resolutions were, after considerable discussion, adopted : —

I. —That, in the opinion of this Conference, it is desirable to establish some permanent Council which will be able to speak on behalf of organisations identified with educational effort in this country, and yet in no way interfere with existing agencies and efforts.

Proposed by the Lord Bishop of Hereford. *Seconded by* Mr. J. H. Yoxall, M.P.

II.—That, in order to elicit and formulate the opinion of such organisations in respect of the broader issues without interference with special points of view, it is desirable that such a Council should consist mainly of accredited representatives of existing educational bodies.

Proposed by Mr. Storr. *Seconded by* Miss Day.

III.—That the Federal Educational Council be constituted as follows :—

(*a*) Representatives, in no case exceeding two, shall be appointed by each of the bodies named on a list to be subsequently prepared by the Organising Committee ; and shall have power to co-opt other members to a number not exceeding one-fifth of the whole.

(*b*) The Council shall meet not less than twice a year, and may meet whenever it shall seem desirable to the Chairman of the Council to summon it.

(*c*) At its first ordinary meeting in each year the Council shall elect a Standing Committee.

(*d*) The duties of the Standing Committee shall be (1) to consider such questions as may come up in the intervals between the meetings of the Federal Council and report to it ; and (2), if so instructed by the Council, to carry out in the intervals between its meetings such of its resolutions as may require to be promptly dealt with.

(*e*) The Council and its Standing Committee shall be composed of both men and women.

Proposed by Dr. A. Hill. *Seconded by* Dr. Roberts.

IV.—That the discussion of the Federal Educational Council shall be public, and all resolutions adopted shall be published.

Proposed by Mr. J. L. Paton. *Seconded by* Prof. Foster Watson.

V.—That a Committee of twenty-five, with power to co-opt five others, be formed, for the following purposes :—

(*a*) To consider and formulate suggestions for financing the Federal Council.

(*b*) To prepare a list of educational bodies to be represented on the Federal Council.

(*c*) To approach and invite these bodies to appoint and send [*the number is to be decided by the Committee*] representatives each to a second conference at an approved date and place.

(*d*) To formulate in detail the constitution of the Federal Council to be submitted for ratification to this second conference.

Proposed by Mrs. Bryant. *Seconded by* Mr. Bowen.

The Committee was then elected, and in the list read out we noticed the following names :—Mrs. Sophie Bryant, Misses Burstall, Cooper, Day, Maitland, Woods ; Dr. Butler, Mr. H. W. Eve, Mr. Garrod, Rev. Principal Gurney, Dr. Heath, Dr. A. Hill, Mr. W. K. Hill, Dr. Keating, Dr. Keynes, Dr. Kimmins, Prof. Lloyd Morgan, Rev. Canon Lyttelton, Mr. H. Macan, Mr. J. L. Paton, Dr. Roberts, Rev. Dr. Selwyn, Mr. F. Storr, Prof. Foster Watson.

COMMERCIAL EDUCATION AT UNIVERSITY COLLEGE SCHOOL.

The subjoined particulars as to courses of study and syllabus of instruction for the new Commercial Department of University College School, reprinted from the *Technical Education Gazette*, may be found of value in other schools in which a commercial side already exists or is contemplated. The aim of the course is to prepare students for the higher branches of commercial life, or for an institution of university rank in the higher branches of industry and commerce. The course covers a period of two years in length.

Admission.

Minimum age 15. Attainments must be of standard required for passing one of the following examinations (one modern language being included among the subjects passed) :—Cambridge or Oxford Local senior pass or junior honours. London University matriculation. College of Preceptors, 1st class. Intermediate London County Council scholars will be admitted to the course, if they can show satisfactory knowledge of French or German.

Course of Study.

First Year.	*Second Year.*
English literature and composition.	English literature and composition.
Commercial arithmetic.	Commercial science.
Commercial history.	Economics.
General economic geography.	Commercial arithmetic.
Book-keeping.	Commercial history.
Mathematics.	Commercial geography
	Book-keeping.

Two of the following languages :—French, German, Spanish, Latin.

Optional.

Chemistry.
Shorthand.
Typewriting.
Drawing.

Second Year.

Higher mathematics, differential calculus, summation of series.

Syllabus.

English.—Selected works of English literature, *e.g.*, Bacon's Essays, Burke, Arthur Helps. Essay writing. *Précis* writing. Practice in speaking. Debates on commercial topics.

Mathematics—First year only.—Algebra—Progressions, permutations and combinations, logarithms, annuities and compound interest. Geometry—Euclid III., IV, and VI. Trigonometry—Elements up to and including solution of triangles, with special reference to the processes of surveying.

Arithmetic — First and second year. — Rapid addition. Abridged methods of multiplication and division. Rapid decimalisation of money. Application of arithmetic to percentage, proportion, calculation of averages. Interest, discount, commission, calculation of present value. Foreign weights and measures. Exchange. Banking operations. International stock. Exchange transactions. Sinking funds. Conversion of loans. Frequent practice in mental arithmetic and casting up of profit and loss.

History.—(1) Short sketch of the industrial and commercial history of antiquity. (2) Commercial and industrial history of the Middle Ages. Centres of commerce. Divisions of society in England. Peasants' revolt and economic effects. (3) From the discovery of America up to the invention of the steam-engine. Special study of the development of England's foreign trade. (4) The industrial revolution.

Geography—First and second year.—Physical geography. Elements of geology, especially as regards coal and metals. Agricultural, industrial and commercial geography of the world. British colonies.

Economics -Second year only.—Nature, scope and methods of economic science. Production and distribution, labour, capital, division of labour, values. Free trade and protection. Equilibrium of demand and supply. Money. Credit. Wages. Relation of state to labour and trade.

Commercial knowledge Second year only.—The machinery of business. Merchant, trader, &c. Principal. Agent. Partners. Companies. Company law. Syndicates and trusts. Employers' liability. Transit by land and water. Navigation law. Tariffs. Banking. Bills of exchange and other negotiable instruments. Insurance. Hypothecation. Chamber of commerce and consulates. Patents and trade marks. Contracts, telegraph codes. *To be illustrated by*:—(*a*) Reference to actual reports of commerce and current newspapers. (*b*) Visits to docks and large commercial and industrial houses, banks, &c.

Modern languages.—French and German—Reading of works of travel and industry, economic treatises, descriptive economics. Commercial condition of foreign countries taught in the foreign language. Commercial correspondence. Essays. The foreign language to be used as the vehicle of teaching as far as possible. Deciphering of foreign handwriting. Spanish and Italian—Reading, elementary grammar, conversation.

Chemistry.

Shorthand.—Pitman's or script.

Drawing.—Freehand. Drawing to scale.

EDUCATION IN NORTHERN SCOTLAND.

THE general report for the year 1899 on the schools in the northern division of Scotland, by Mr. A. Walker, one of Her Majesty's chief inspectors, has recently been published by the Scotch Education Department. Like similar reports for the other divisions of Scotland to which we have already directed attention, it contains an abundance of interesting material for the student of scholastic affairs. We can only select a few of the topics likely to be of especial interest to our readers, though most of these official publications, as we have more than once pointed out, will well repay a careful study in the original.

Concerning Pupil Teachers.

For many years past very few boys in this as in all other districts have presented themselves as candidates. Their attainments are generally creditable. Their written examinations show some weakness in grammar and arithmetic, and, what is perhaps of more consequence, a dearth of general information—a sure indication that they do not read enough. It may be from want of time or want of opportunity, but it is a fatal defect. The more a teacher knows the better he is able by the living voice to quicken the intelligence of those under his charge, and the less does he need to have recourse to a dead text-book. One great drawback to the pupil-teacher system is that the great majority have no chance of completing their training. The colleges can take in only a few of them, and those left out are in many cases the very ones that stand most in need of the ministrations of these institutions.

It is to be hoped that, along with the recasting of their curriculum, the training colleges may hit upon some means of extending their premises and their teaching staff. There is no question as to the value of the training; all who have had it are ready to testify to the benefit received; the difficulty is as to how their sphere of influence can best be extended.

It does not at all follow that the man who knows most can teach best—in all grades of the profession there are many examples to the contrary; but it does follow that, if a man can teach, the more he knows the better. Country pupil-teachers, with their limited facilities for instruction, are at a great disadvantage as compared with those in large towns who can attend central classes. They have, however, the decided advantage of seeing how the work of a school is carried on as a whole, and of being able to put their hand to any part of it; whereas the town pupil-teacher may have to do with only one class or part of a class—very inadequate preparation for the charge of a school in which all classes and subjects have to be taught single-handed. If the country teacher be a man of character and energy, as most of them happily are, the pupil-teacher cannot fail to benefit more by his daily contact with him than if he were one of a large class at a central school.

Teaching of Elementary Subjects.

There is general agreement that reading continues to improve, but attention is drawn to the prevalence of exaggerated and unnatural emphasis, and to the trivial character of many of the reading lessons. The field of English literature is so wide and so varied that it should not be a matter of much difficulty to make an attractive collection of passages, scientific and didactic, dramatic and rhetorical. The reading lesson, properly utilised, should be the most important part of the day's work. To begin with, the lesson should be worth reading; and the teacher, by patient questioning and necessary explanation, should make sure that it is thoroughly understood. A distinguished professor of education in a recent lecture puts it thus: "Reading means the English language *understood*; and this again means understood wisdom, understood thought, understood morality, understood religion. Through reading and conversation between master and pupil on what is read we chiefly educate. This, supremely, is education, and it would suffice even if we had nothing else." This conversation between master and pupil is too often neglected, and the young teacher is quite content to spend the hour in hearing one scholar read after another, and is well pleased if each has had his turn.

In the arithmetic lessons there is too much working by rule, and too little application of reason and common sense; too much practice in long, complicated, useless sums, and too little inculcation of principles. Above all, there is great need of increased practice in mental arithmetic, and this should include much more than short methods of finding prices of dozens and hundreds, of finding a year's wages at so much a day, or of dividing by 69, 79 or 89. These are useful in their way; but what is wanted is promptness and accuracy in adding, subtracting, multiplying and dividing small numbers; and the teaching of every new rule should begin with mental exercises, exhibiting all possible cases of it with the smallest possible numbers.

An interesting experiment in the teaching of composition has been made in Fraserburgh Public School. The scholars, from the infant class upwards, are encouraged to stand up and tell something that they have done, or seen, or read. They were all eager to tell their story, and did it very creditably in their own words. Later on, when they are able to write, time may be very profitably spent in writing the story on slate or paper. In this way they gradually acquire command of language and power of expression. Some teachers imagine they are teaching composition when they make their scholars always answer in complete sentences. It is a delusion and a waste of valuable time. Why use six words when one will do?

English Subjects.

The most noteworthy fact in regard to the teaching of these subjects is the restoration of history to its proper place in the curriculum. It is surely a good thing that every citizen of the greatest empire the world has ever seen should have some knowledge of how it has grown, and, above all, that he should know the course of the long struggle for national freedom, which is the crown and glory of our annals. It will be our duty to guide the teachers into good methods of imparting this knowledge, to free them from petty details, and to ensure that a broad foundation be laid, upon which by further effort a fair superstructure of ampler knowledge may be raised. The aim should be to infuse a spirit of patriotism, to let the pupils know what we fought for in the past, why we fought for it, and why we are ready to fight for it again.

Geography continues to be, on the whole, well taught. Here and there a little less memory work and a little more application of reasoning power would do no harm. It is easy to interest a class if you teach them how geographical position and physical features influence climate, productions and distributions of population; why one country should grow hemp, another silk or cotton; why one should be mainly manufacturing, another pastoral or agricultural. Of course topography should not be neglected, but the getting up of lists of towns, rivers, capes, &c., is of very minor importance.

A competent knowledge of his own language and ability to use it to advantage in writing and speaking should be the principal aim of elementary instruction. This should include a knowledge of how words, clauses and sentences are connected with each other, and of their proper sequence and subordination. A great many technical terms, suited to the inflectional intricacies of Latin grammar, but quite foreign to the idiom of our native speech, may be conveniently dropped. Learning by heart of choice passages of both prose and poetry should be in constant use in all the classes; and it is, generally speaking, better to learn a dozen short poems than the same number of lines extracted from any one long poem. It will not matter much if the full comprehension of some of the poetry be a little beyond the present stage of the pupil's powers; he will understand it better by-and-by.

French.

While the boys mostly learn Latin, and a few of them Greek, the girls, while not neglecting Latin, study French and German. As has often been pointed out, French pronunciation is in many cases weak. A teacher in an important school had actually taught his pupils that the letter *n*, not initial, was entirely quiescent, and so they pronounced *mon*, *mo*; *sont*, *so*; and *mon enfant*, *mo affa*. He was strongly advised to attend the Saturday French and German classes for teachers, which had a very encouraging measure of success. This case is adduced as representative of the diminishing class of men pretending to teach a subject of which they have no complete knowledge.

The increasing demand for modern languages, and the reasonable requirement of the Department that due care should be given to the pronunciation of them, have resulted in the institution of Saturday classes for teachers by competent instructors. The attendance has been satisfactory, and the desired end will no doubt be gained. If a teacher has interest enough in his subject to give up his weekly holiday for it, he may be trusted to get all the good he can out of it. Earnestness of purpose, an eager desire for self-improvement, and zeal in their daily work are unfailing characteristics of the teachers of this district.

ITEMS OF INTEREST.

GENERAL.

In our September issue we shall resume the Test Paper section which many of our readers find so useful. We have arranged to publish in September and November sets of papers in the most popular subjects of the Senior, Junior, and Preliminary Cambridge Local Examinations of December next. The two papers in each subject will together cover the whole of the prescribed syllabus. The first papers will provide a suitable means of testing the work done during the earlier part of the year, while the second will enable teachers to discover points which require revision before the actual examinations take place. In our October number will be published a series of revision papers in the most largely offered subjects of the Second and Third Class Pupils' Examination held by the College of Preceptors in December. Similar revision papers for students who are to be presented for the January, 1901, Matriculation Examination of the University of London will appear in the December number.

The first of four articles dealing with "Observational Astronomy," a subject which is now included in the syllabus of "Elementary Science" for the Queen's Scholarship examination, is published in this number. The remaining articles will appear month by month. The current books on Physiography treat in a very inadequate manner the aspects of astronomy with which Professor Gregory has concerned himself, and we believe that those instructors who are responsible for the preparation of pupil teachers and others for the Queen's Scholarship examination next December will find the articles very helpful and suggestive.

During August, the following congresses upon educational subjects will be held in connection with the Paris Exposition:—July 30th-August 4th, higher education; July 31st-August 6th, secondary education; August 2nd-5th, primary education; August 9th-11th, educational Press; August 9th-15th, stenography; August 22nd-25th, psychology; August 29th-September 1st, teaching of Art; August 30th September 6th, physical education; July 30th-August 3rd, teaching of social science; August 6th-11th, technical and industrial education.

At the summer general meeting of the Incorporated Association of Headmasters held in the Combination Room of St. John's College, Cambridge, under the presidency of Dr. J. Gow, the following resolutions were adopted:—"That in the opinion of this Association the draft Order in Council for transferring to the Board of Education certain powers of the Charity Commission is neither adequate nor satisfactory, even as a first step towards organising secondary education in England, inasmuch as (1) the Order does not provide for the transfer to the Board of Education of the educational powers under the Charitable Trusts Acts and the Endowed Schools Acts exercised by the Charity Commission; (2) the Order provides for the concurrent exercise of certain powers by the Board of Education and the Charity Commission, thus duplicating part of the staff of the central authority, and setting up a new authority over schools which overlaps instead of absorbing that of the Charity Commission." "That in all secondary schools for boys where there is no cadet corps it is important that the curriculum should include instruction in the use of the rifle."

THE following series of resolutions, proposed by Dr. R. P. Scott, on behalf of the Council of the Association, were, after a discussion in which Dr. Gow said there had been a good deal of hysteria, referred back to the Council for further consultation:—"(*a*) That, in the absence of special agreement, notice terminating the engagement of an assistant master should expire at the end of a school term, and should be given not later than seven days from the beginning of the term at the end of which it expires. The Association believes this to be the custom of the profession. (*b*) That it conduces to the efficiency of schools that the headmaster should have the sole power both of appointing and dismissing assistant masters. (*c*) That the headmaster should be required to report, at the next meeting of the governors, each change on the staff. (*d*) That an assistant master summarily dismissed for misconduct should have no appeal save to a law court. (*e*) That an assistant master dismissed with notice should have the right of making, within six months after receiving such notice, a written presentment to the governing body of the school, but not of demanding a judicial hearing. (*f*) That provision should be made by which, on the motion of the governing body, an official inquiry should be held *in camera* by or on behalf of the Board of Education, and the result thereof should be formally communicated to the parties concerned and the governing body."

THE success which has attended the annual conferences of science teachers from all parts of the country, held in London during the Christmas vacation, seems to have encouraged the science teachers of the Midland counties to try the same experiment locally. A meeting was held at the Birmingham Technical School, under the presidency of Dr. Sumpner, at the end of last month. Mr. G. Fletcher, the Science Inspector for the Midland counties, read a paper on "Aims and Methods in Technical Education," and Mr. H. K. Frew, Headmaster of the Waverley Road Higher Grade School, Birmingham, dealt with "the Proposed Higher Elementary School." Speaking of the age-limit contained in the recent minute of the Board of Education, Mr. Frew said that it appeared from statistics he had received from forty-eight higher-grade schools, out of sixty which would be affected by the age restriction, that 4,240 pupils who were now receiving instruction would be compelled to leave under the age limit, and that 1,533 children who had completed a year's training would have been turned into the streets a year ago. But as Mr. C. A. Buckmaster, the chief Science Inspector of the Board of Education, remarked in the subsequent discussion, the advantages and defects of the new scheme can only be ascertained by experience of its operation. We are, however, convinced, with Mr. Buckmaster, of the excellent work which is being accomplished by higher-grade schools, and of the importance of doing nothing to impair their good work.

AT the recent general meeting of the Agricultural Education Committee, the hope was expressed that the Board of Education will introduce some modifications into the curricula of the training colleges to ensure the qualifications of, at any rate, a certain number of trained teachers to give the instruction on elementary science and "common things" required by the new code. Something may be done in this direction for existing teachers and pupil teachers by the summer courses and Saturday classes of the county councils. But it is no part of the statutory duty of the local authorities to train elementary day-school teachers in what is now, under the new Code, practically an obligatory subject.

A NOTEWORTHY characteristic of the distribution of prizes to the students of University College, London, by Sir Michael Foster on July 3rd, was the large number of lady prize-winners. In many of the faculties all the important prizes were secured by women. Lord Reay, President of the College, who was in the chair on the occasion, was sufficiently impressed by the circumstance to offer a prize to the students for an essay discussing the reasons for the remarkable success of the ladies. We should like the opportunity of reading some of the men's essays.

DURING the week beginning July 16th an Exhibition of Boys' Hobbies was held at University College School, London, to which the President and members of the School Scientific Society invited the parents and friends of the boys. In examining the exhibits we were most impressed by the diversity of the tastes shown by the boys. Of course, there were postage stamps galore, while butterflies and moths gave quite a familiar aspect to the exhibition. Boys, here and there, gave evidence of a love for plants, and very occasionally a youth had turned his attention to minerals. Photography is evidently very popular in the school; one boy, indeed, has systematically photographed examples of the different styles of architecture in Canterbury Cathedral; another boy, with a scientific turn of mind, has made a hobby of micro-photography, and his photographs of diatoms (x 500) are very creditable. But we were unprepared to find a collection of play-bills, another of theatre and concert programmes, and quite a number of albums of pictorial post-cards, mostly foreign. A few boys indulge in manual work in wood and metal, and there was one exhibit of Rontgen-ray pictures. Altogether the exhibition was highly instructive, showing clearly, as it did, that with a little encouragement boys can easily be got to use their leisure wisely.

THE paper read by the Headmaster of Eton, at the Royal United Service Institution, on "The Relation of Public Secondary Schools to the Organisation of National Defence," is very properly giving rise to considerable discussion. The improvement in the supply and equipment of our officers is, as recent events in South Africa have fully demonstrated, of the most urgent importance. Dr. Warre maintains that a wider diffusion of the knowledge of the *elementa* of military science among the educated youth of the nation would tend not only to raise the standard of military knowledge in the army and auxiliary forces, but to improve the methods of communicating that knowledge to the rising generation. With the sanction and co-operation of the majority of the headmasters of the public schools Dr. Warre has, in a memorandum to the War Office, urged the desirability of a new Act of Parliament enacting that all persons *in statu pupillari* in public secondary schools above the age of 15, able and willing to bear arms, should be enrolled for the purpose of instruction in drill, manœuvre, and the use of arms.

IN a letter which he has written to *The Times*, Professor Armstrong makes it clear that in his opinion the Headmaster of Eton has not gone to the root of the matter. The fundamental necessity is, says Dr. Armstrong, improved methods of teaching in the early years of school life by which the intelligence of public-school boys shall be more fully developed, a consummation which he considers can only be ensured by an adequate training in the scientific method. While fully recognising the value of sensible practical teaching of the principles of physical and chemical science in maturing and strengthening the intelligence, we are certain that Professor Armstrong goes too far in disposing of the present excellent work which is being done in this direction in many secondary schools as "the twaddle called science." Nor will his remarks on the fitness of the headmasters of our public schools for their important and onerous duties find many sympathetic hearers. Too many men of science regard their own subjects as the only ones worthy of serious attention.

The London School Board a short time ago applied to the Board of Education to have the existing seventy-nine higher-grade departments in connection with their schools recognised as higher elementary schools under the recent Minute to which we have already directed attention. The official reply states that in the opinion of the Board of Education the establishment of so large a number of higher elementary schools in London would not be consistent with the intention of the Minute. That intention is that higher elementary schools should be open to only the most highly qualified scholars, who would be likely to continue their education throughout the whole four years' course of instruction, and that a higher elementary school should be furnished to that end, in every case, with well-equipped laboratories, as in the case of existing schools of science. The Board of Education will be ready to entertain a proposal for the conversion of the schools of science provided by the London School Board into higher elementary schools, and in localities where additional schools of science might, so far as educational reasons are concerned, be recognised, the Board of Education will consider an application for the recognition of a higher elementary school.

The London School Board consider the reply unsatisfactory, and have addressed a long letter to the Board of Education calling attention to a series of arguments which, it is maintained, justify their request. The application only asks for one higher elementary school for every 100,000 inhabitants. The London School Board will, it is urged, be able to give evidence in reference to the schools for which they have claimed recognition that the scholars are "highly qualified." With the approval of the Education Department the London School Board has intentionally made its higher-grade departments of a different type from the school of science in order to meet the particular requirements of the metropolis, and any attempt to interfere with the literary character of the education of the higher-grade departments would be, the letter points out, very undesirable. The final decision of the Board of Education is being awaited with the keenest interest by many School Boards besides that of London.

Bradfield College has been celebrating its Jubilee by performances of the "Agamemnon." The Bradfield Greek play is justly famous, and this year all the parts were taken by boys, and the orchestra also consisted of boys only. The theatre, as is well known, was cut from a chalk-pit by the Warden in 1888, and has been copied from the theatre at Epidaurus, the only unspoiled example which remains of the old Greek theatre. Except for the discarding of masks and the high *cothurni*, all the essential features of Greek tragedy were reproduced. The music was specially composed for this revival by Mr. Abdy Williams, the Director of Music at Bradfield College, and one of our few authorities on Greek music. The ancient modes had this year been discarded in favour of the ordinary major and minor modes, but the setting was singularly appropriate, though many critics complained of want of tune and variety. The orchestra consisted of six lyres, exact copies of the ancient *citharae*, and four flutes, modelled on some that were dug up at Pompeii. The spectacular effect was much admired, the dresses of actors and chorus being not only archæologically correct but entirely satisfactory to the æsthetic sense.

The acting was singularly even, all concerned declaiming with distinctness. A. P. Blunt made a noticeable Clytæmnestra, and G. K. Leach—a son of Mr. A. F. Leach, the Charity Commissioner and Historian—was sufficiently sinister as Aegisthus, while G. R. Barker, senior prefect and cricket captain, showed considerable cleverness in the part of the Watchman. L. Starey showed himself an actor of real gifts, standing out from the rest in the part of Cassandra. The chorus, in which were included the college wicket-keeper and fast bowler, sang well and performed their evolutions round the altar with dignity. Among the visitors were the Lord Chancellor, the President of the Board of Trade, Sir Rennell and Lady Rodd, the Warden of Merton, the Principal of Brasenose, and the headmasters of Winchester, Charterhouse, Marlborough, Bedford, Clifton and Sherborne. The Bradfield jubilee year is also being signalised by the appearance of a History of the College, contributed by various old boys, and edited by Mr. A. F. Leach. Mr. Frowde is the publisher. The History traces the progress of St. Andrew's College from its foundation by the "Tom Stevens" of Mozley's "Reminiscences" to the present day. It contains a full account of the doings of Bradfield boys in the past and is rich in anecdotes and amusing recollections.

Dr. H. J. Spencer, in his article on "The Athletic Master in Public Schools," in the July number of the *Contemporary Review*, defines an athletic master as one who is appointed solely or principally on the ground of his proficiency in school games. The picture of such a master's work in school, even if it were only half true, would show what a pernicious influence the athletic master often exerts. "His returns to colleagues (for report purposes) are apt to be, like Greek verbs, 'irregular and defective'; his class-room resembles a lost property office, his desk a waste-paper basket, and his own rooms present ever-changing views of most admired disorder. Of all men he is least capable of inspiring a right attitude towards work, or of enforcing the incidents of a routine. Of professional zeal he is entirely destitute; he has no sense of the dignity of his profession, and his work is characterised by a loud voice and perfunctory manner. His pupils, recognising in him a kindred spirit, soon learn to regard him with feelings of affection mingled with contempt."

In a short contribution to the *Westminster Review* for July, Mr. A. T. Simmons deals with the subject of "Science in Higher Grade Schools." He briefly traces the growth of these higher elementary schools, describes their work, and urges the necessity for removing any impediments to the future development of the prosperous Schools of Science which have been started in connection with many of them.

A correspondent sends us the following cutting from *The Western Daily Press*, which we reprint with pleasure:—"There is perhaps no way in which the children of British officers can be more reasonably helped than by the provision of really excellent education for them. It gives them that which in the ordinary course of affairs would have been theirs. The Governors of the Redland High School for Girls, in offering free studentships for the daughters of British officers who have fallen in the war, are setting an excellent example. The remarkable educational results obtained by this school are the best possible proof that this offer is one which the widows of officers may most gladly accept for their children."

The following lesson in natural history is from the *Royal College of Science Magazine*:—*Scene:* Reptile House, Zoo. *Time:* Whit Monday. Paterfamilias *loq.:* "Yus, my dears, and when the frogs grow older they get a tail, and then they're lizards, and then they get older 'n older, and longer 'n longer, and their legs drop off 'n then they're snakes."

With the view of assisting teachers in rural elementary schools to work on the lines recently suggested by the Board of Education, the Technical Education Committee of the Essex County Council have arranged for their teacher in biology to give a free series of six outdoor demonstrations on field botany on Saturday afternoons. The meetings are to be held at different centres in the county within walking distance from a railway station. The demonstrations are restricted to school teachers, who must pay their own expenses, but any teacher who takes an interest in general natural history is eligible. The meetings will take the form of rambles through typical bits of country, and in this way an introductory knowledge will be gained of the wild plants of the county. The object of the series is to study the life of plants, especially in relation to their physical surroundings, to illustrate methods of teaching in the field, as well as to cultivate a desire to adopt somewhat similar methods of instruction in the rural schools. Other natural objects will not be neglected, especially if, as in the case of insects, they come within the circle of influences that directly affect the life history of a plant.

THE governing body of the London School of Economics and Political Science have again offered six studentships for competition in the session 1900-1 among University Extension students. The awards will be made by the Council of the London Society at the end of the session to those students who are recommended by the lecturers and examiners in economics and political science as most likely to profit by more advanced or more specialised work in the subject. Holders of these studentships will be entitled to free admission to the lectures and classes of the school for one year, renewable for a second and a third year if the reports on their diligence are satisfactory.

IN order to provide a supply of capable men for commercial work in French colonies, a colonial institute is to be opened in Marseilles. Students of the institute will be sent abroad at the expense of the State, to collect information, which will be furnished to commercial houses in the form of detailed reports. Instruction is to be given in botany, zoology, natural history, colonial geography, and history. There will be a museum of plants, minerals, &c., so that the student may become acquainted with the actual products of the colonies; also a school of medicine to familiarise him with diseases peculiar to tropical countries. It is probable that arrangements will also be made for teaching Oriental languages.

THE object of the China Association School of Practical Chinese which has now been established is to enable young men going out to China to acquire such a practical knowledge of colloquial Chinese as will be of some value to them on arriving in that country. The language taught will be that known as Southern Mandarin, the dialect spoken throughout the Yang-tze Valley and generally employed over four-fifths of the Empire. The teaching will be conducted exclusively by native teachers. These gentlemen have been selected by Mr. George Brown, late Her Majesty's Consul at Kiukiang, who proceeded direct to China for the purpose, and who will have the supervision of the work in London. It is hoped that by the end of the year the new school may be incorporated as one of the teaching branches of the University of London.

THE Organisations Committee of the Women's Industrial Council are desirous of placing before the public the following scheme:—It has been suggested that a collection of drawings, water colours, photographs of buildings, scenery, and places of interest, and reproductions of the best pictures and studies of old masters in the chief galleries of Europe, should be instituted for the purpose of circulation among the various working girls' clubs of London. The club workers who belong to the organisations committee believe that such a circulating collection would, by affording ever-changing objects of interest, brighten the girls' lives and arouse their powers of observation. For the purpose of starting such a collection the committee invite the active sympathy of that large section of the public that is convinced of the influence of art as an educator, and hope to receive a sufficient number of photographs and other reproductions as may enable them to inaugurate the movement during the present season. Subscriptions will also be gratefully received. All offers of help may be addressed to Miss Amy Joseph, hon. secretary, 34, Inverness Terrace, W.

SEVEN hundred and seventy-nine candidates entered for the last Cambridge Higher Local Examination, which was held at twenty-three centres. The new regulations containing the announcement of set subjects in the various groups for December, 1901, and June, 1902, as well as for December, 1900, and June, 1901, can now be obtained from the local secretaries, or from Dr. Keynes, Syndicate Buildings, Cambridge. Changes have been introduced in the regulations for Latin, Greek, and History.

THE Civil Service Commissioners announce that on September 18th, 1900, and following days, a competitive examination will be held in London, Edinburgh, Dublin, Bedford, Birmingham, Bristol, Leeds, Liverpool, Manchester, Newcastle-on-Tyne, Plymouth, Aberdeen, Glasgow, Belfast, and Cork, at which examination 100 candidates will be selected for clerkships of the Second Division of the Civil Service. Intending candidates must make application on forms obtainable from the Secretary, Civil Service Commission, S.W., which must be returned to him on or before August 30th, 1900. The limits of age are 17 and 20. Candidates must be of the prescribed age on the first day of the examination. The fee for attending the examination is £2. The salaries of clerks in the Second Division, for a daily attendance of *not less than* seven hours, commence at seventy pounds per annum, and rise by annual increments as follows, viz.:—From £70 to £100 by annual increments of £5. From £100 to £190 by annual increments of £7 10s. From £190 to £250 by annual increments of £10. There is a higher grade of the Second Division, with salaries commencing at £250 per annum, and rising by annual increments of £10 to £350. Promotion to this higher grade depends on positive merit, and not on seniority.

THIS competition is of peculiar interest, as it is the first to be held under the revised regulations. The subjects of examination are as follows:—(1) Handwriting and orthography, including copying manuscript: (2) Arithmetic; (3) English composition; (4) Précis, including indexing and digest of returns; (5) Book-keeping and Shorthand writing; (6) Geography and English History; (7) Latin, or French, or German (translation from and into the language); (8) Elementary Mathematics, viz., Euclid, Books I.-IV., and Algebra up to and including the binomial theorem; (9) Inorganic Chemistry, with elements of Physics. Not more than four of the subjects numbered 4 to 9 may be offered. As this list coincides as nearly as possible with the curriculum of the higher forms of most secondary schools, teachers who have to prepare candidates for the Civil Service, and at the same time attend to the rest of a large form, will find this new arrangement a great boon.

AN Open Competitive Examination for the situation of Assistant Examiner in the Patent Office will be held in London, commencing on September 11th, 1900. The number of situations to be filled will be the number vacant at the time of the examination. The number now vacant is ten. The limits of age for these situations is 21 and 24, and candidates must be of the prescribed age on the first day of the examination. Application forms obtainable from the Secretary, Civil Service Commission, S.W., must be returned to him not later than August 23rd, 1900. The syllabus of the examination is as follows, viz.:- (1) English Composition; (2) Arithmetic (including vulgar and decimal fractions); (3) Précis; (4) Geometry Euclid I.-IV., VI. and XI., Practical Geometry, including elements of practical solid geometry; (5) Mechanical drawing, *i.e.*, machine drawing; (6) Mechanics—Statics and Dynamics, treated without the aid of the Differential Calculus, Mechanism - to include both theoretical and practical acquaintance with the subject; (7) Chemistry organic and inorganic, including practical analysis; (8) Electricity and Magnetism, including a practical knowledge; (9) Hydrostatics, Hydraulics, and Pneumatics, treated without the aid of the Differential Calculus. Candidates must pass to the satisfaction of the Civil Service Commissioners in one of the subjects numbered 6, 7, and 8, according to the nature of the situation vacant, *i.e.*, according as the duties to be performed render a knowledge of mechanics and mechanism, of chemistry, or of electricity and magnetism absolutely necessary. The remaining subjects are optional. The obligatory subject in respect of the ten situations at present vacant is Mechanics and Mechanism. The salary of Assistant Examiners in the Patent Office commences at £150 a year, and rises by annual increments of £15 to £450. There is a prospect of promotion to a small higher class with a salary commencing at £500 and rising to £700. A fee of £5 will be required from each candidate attending the examination.

ERRATUM.—For line 4, column 1, page 244 of our last issue read "a denarius of Cæsar."

WELSH.

PRINCIPAL REICHEL, at the recent meetings bringing the session of the North Wales University College to a close, reported that an application had been received from a conference of educational authorities, quarry managers, and workmen at Festiniog urging that a School of Mines should be established at the College. The matter came before the Court of Governors, when a deputation from the conference supported the application with a remarkable statistical statement, in which it was shown that over 30,000 workmen, chiefly adults, were employed in North Wales in the quarry and mining industries. No class of the population had taken a keener interest in educational questions in general, or contributed more generously in proportion to its resources, than the quarrymen of North Wales. The Court gave a favourable reply to the deputation and had made arrangements for the holding of another conference to discuss the means by which the establishment of a School of Mines at the College could best be effected.

THE part of the report of the Charity Commissioners which deals with the Welsh Intermediate Schools has been published separately. Many of the facts about Welsh secondary education contained in this reprint are of more than local interest. The light which the reports of the examiners of the Central Welsh Board throw on the characteristic qualities and deficiencies of Welsh pupils may be cited as an instance. It appears that an aptitude for the literary side of education, accompanied with a certain impatience of the demands made by severe and exact studies, is discernible. Under the head of Science it is incidentally pointed out that there is a too uniform tendency to reproduce the text book, vague notions of the sequence of steps in the proof of a geometrical proposition are too common, and there is an absence of clear ideas as to the nature of experimental verification.

THE Collective Staff for the 93 Welsh schools with which the Charity Commissioners deal in their report consists of 72 headmasters and 21 head mistresses, 169 assistant masters, and 183 assistant mistresses. The permanent staff is therefore 445 teachers to 7,390 scholars, or a proportion of a little over 1 to 16. The emoluments from all sources of the 72 headmasters amount approximately to £20,090 6s. 8d., and of the 21 head mistresses, to £4,874 5s., showing an average of about £279 for each headmaster, and about £232 for each head mistress. The salaries paid to the 169 assistant masters amount to about £20,598, and the salaries paid to the 183 assistant mistresses amount to about £18,373, or an average salary for each assistant master of nearly £122, and for each assistant mistress of a little over £100.

SCOTTISH.

LORD BALFOUR'S Education Bill has not yet reached the second reading in the House of Commons, and in view of the lateness of the session and the determined opposition that has been raised, it seems as if the Government had given up all hope of passing it this session. In the circumstances, those most interested in higher education believe this to be a wise decision. It is recognised that any attempt to pass the Bill in the limited time now available would lead to dangerous compromises which might rob the Bill of its most valuable and essential features. Better wait a year or two years for a good Bill than accept an emasculated one now.

MR. BRYCE, M.P., at a recent conference with the members of the Aberdeen School Board, strongly supported the demand for a Consultative Committee. He feels that it would greatly stimulate interest in educational questions if they had some body which was competent and authorised to discuss these questions and to advise the Government regarding them. The Scotch Education Department is located in London, and there is no central authority in Scotland, and without giving any powers to this central authority which would interfere with or hamper the work of the Department, he thinks it would be very useful and important to have a body in Scotland to discuss these questions, to focus public opinion, and to endeavour to influence and convey to the Department the opinions of Scotland on these matters.

THE dismissal of Mr. Anderson, Rector of the Callender High School, is of more than local importance, owing to the strong and unique action the Scotch Education Department has taken in regard to it. Mr. Anderson was dismissed without any reason being assigned, and, in face of the most satisfactory reports from year to year by independent examiners. The Scotch Education Department, who received notice of the motion for dismissal, sent a communication to the Board stating, *inter alia*, that "My Lords think it right to give expression to the high opinion which, from the reports upon the school, they have formed with respect to Mr. Anderson's services." The sting of the letter, however, is in the last paragraph, which says that "In view of the notice of motion for dismissal, my Lords have felt it to be their duty to suspend the grant under the minute of April, 1899" (amounting to £300). "Such grants are justified only when my Lords are convinced that every local effort is given to the promotion of efficiency of the school both by adequate financial contributions and by the considerate encouragement given to the staff." The McLaren Trust, which literally subsidises the school, followed the lead of the Department, and suspended payment of its contribution. Notwithstanding all this, the dismissal was effected by a majority of three to two. A meeting of ratepayers was thereupon summoned, at which the action of the majority was condemned and repudiated, and the members of the Board called on to resign. The two members of the minority and one of the majority have acted on the resolution and resigned. The two remaining members have heroically determined to die at their posts, but as they do not constitute a quorum the Board is already defunct, and as School Board members they are practically dead. The Department have as yet taken no action in the circumstances, but they will probably order a new election and meanwhile retain the services of Mr. Anderson."

THE papers in the Leaving Certificate Examinations presented no new features this year save the oral test in Modern Languages. That in German was entirely satisfactory, while the one in French was just the reverse. No one has yet been able to determine whether the string of words arranged in sentences was meant to convey any idea or not. Perhaps the examiner will divulge the secret in his report. Ridiculous features always manage to find a place in the French papers. In the Higher Grade paper pupils are asked to give an account of Rabelais' great novel. The Department propose to taboo all knowledge that is not got at first hand by the pupils themselves, but surely they do not expect school pupils to read Rabelais in the original. From the question one would hope that the examiner had not done so.

IRISH.

THE Report of the Commissioners of Education in Ireland for 1899 has just been published. It gives an account of the income and state of those schools which possess any endowment other than that derived from the Intermediate System. The endowment (chiefly for secondary schools) is very small, being mainly the Ulster Royal Schools' Endowment, and it is decreasing owing to the reduction of rents all over the country. The total income for 1899 was £7,632 18s. 7d., which is less by £1,000 than the receipts for 1898. Out of this income £751 15s. 0d. was spent in annuities to retired headmasters. This sum, however, will gradually cease with the deaths of the old headmasters previous to the present system.

EACH school is under a Local Board of Management; the inspector is appointed by the Lord Lieutenant. Mr. Murphy gives a detailed account of the condition of each school. The number of students is small, the largest being that of Portora Royal School, Enniskillen, under Dr. Biggs (one of the best schools in Ireland), which has 110 pupils, 92 of whom are boarders. Nevertheless, the number in the schools as a whole has considerably increased since 1891, when they were reorganised under the scheme of the Educational Endowments Commission, while their efficiency—judged at least by the results of the Intermediate examinations—is very high among Irish schools. In 1890 the total number in the Ulster Royal Schools was 89, and 13 passed the Intermediate examinations. Other endowed schools had 121 pupils, of whom 30 passed. In 1899, in the schools altogether, there were 590 pupils, with 208 passes.

THE inspector gives a favourable account of the teaching, especially in Latin and French, which he was himself best qualified to test. French was taught as a living language, with correct pronunciation not always the case in Ireland. In two subjects, however, he urges strongly the need of improvement – drawing and experimental science. In many of the schools no science is taught, and in none is it taught adequately, or with proper equipment and arrangements. A good deal of room for improvement also exists in regard to the buildings and the sanitary and other arrangements. Considering that over £5,000 endowment is spent in these schools solely for educational purposes, and that they can receive very considerable endowment from the Intermediate and also from the Science and Art Department, it is disappointing that the number of pupils is not larger, the equipment of the schools better, and the education given wider.

THE Report of the Intermediate Board for 1899 has just appeared. The numbers entering for the examinations in 1899 were 8,395; girls—2,231, boys—6,134, being a decrease of—boys, 1,063, and girls, 396, total, 1,459, as compared with 1898. This was chiefly due to the raising of the lower limit of age in the preparatory grade. In 1898 the total number of students who presented themselves was 9,073; in 1899 it was 7,760. The percentage of passes was the highest yet reached—68 boys, 69 girls—due perhaps to the more reasonable nature of the papers set, owing to public agitation.

THE total income of the Board for 1899 was £101,291 5s. 3d., of which £53,093 11s. 7d. was given in results fees among 363 schools, 210 boys' schools and 153 girls' schools. It is curious that, while the Leinster boys' schools received £16,502, and the Ulster £8,338 in results fees, the Ulster girls' schools earned £5,958, and the Leinster only £4,973. The highest sum taken by any one school—the Christian Brothers' School, North Richmond Street, Dublin—was over £1,600.

IN their reports, the Examiners speak more highly than usual of the work done. This, too, is probably due to the nature of the papers. They complain less of evidence of cramming and mere memory work, and in some instances give high praise. The backward state of physical science in Irish schools is shown in the small number taking Chemistry or Physics (the only science subjects, with the exception of some Botany for girls, on the programme). Out of the 7,760 pupils examined, only 892 took either of these subjects.

IT is hoped that the reforms about to be instituted in the Intermediate System, the regulation of the Government Science and Art Classes by the new Irish Department, the co-ordination of these courses with those of the Intermediate, and the granting of special sums for science apparatus, will greatly alter this state of things.

MR. PLUNKETT, in answer to a question lately put by Mr. Field in the House of Commons, stated that the fee for each course in the summer classes for teachers in the College of Science, Dublin, was £2 2s., except to teachers under the National Board, or belonging to Science and Art classes, while teachers attending summer classes in the College of Science, London, are admitted free, receive railway fare and £3 towards expenses. Out of 81 teachers attending the classes in Dublin last year, only 3 paid the fees. This shows that very few Intermediate teachers attended, for only about 21 Intermediate schools have Science and Art classes in Ireland. Yet it was for these very teachers the classes were started. It is hoped the new Department will be able to remedy this anomaly, as owing to the little employment in science teaching hitherto obtainable, there is great need of good science teachers in such schools.

THE National Board are holding special classes for the instruction of teachers in primary schools in the giving of object lessons, and in training of the hand and eye, subjects that will be introduced under the reforms of the Board. A very large number of teachers have applied for admission to the classes. About 400 were invited, but many more have asked leave to attend, and arrangements will be made to include them.

THE Central Association of Irish Schoolmistresses are arranging for a series of lectures and practical training during the autumn in preparation for the Examination for Teachers held by Trinity College, Dublin, on January 3rd, 1901. They have invited Mr. Keatinge, Lecturer in Education, Oxford, to come to Ireland for a month for this purpose. It is expected that some of the important educational institutions under the

Loretto nuns, and one of the training colleges for women primary teachers, will also obtain lectures and criticism lessons at the same time.

The Examinations for Women held by Dublin University have long been declining owing to their unsuitability to the present state of girls' education in Ireland, and the number entering for them has now become so small that the Board have decided on re-organising the course. It is intended to make them identical with the Honour Entrance Examination in subjects, marking, standard and papers, with one exception, that a modern language may be substituted for Greek. A certificate will be given to those who pass. As this will represent a recognised test and attainment, the change may increase the interest in the examination. The majority of girls, however, will prefer to enter the Royal University and obtain a degree. The teaching and degrees of Dublin University are wholly closed to women. In this respect Trinity College stands almost alone among the universities of civilised countries.

CURRENT HISTORY.

There are, or have been, rumours of a dissolution of Parliament. In these days we are never sure how long a House of Commons will last, though with recent Conservative Cabinets we seem to have been drifting back into an approach to the full legal length of life for our elected House. In the eighteenth century, after the much ill-commented Septennial Act was passed, it was almost universal, except in the case of the demise of the Crown, for Parliament to run out its allotted space. Since the Reform Acts of 1832, on the other hand, with the exception we have noted above, Parliaments have been prematurely cut short by ministerial crises. It would take us beyond our prescribed limits to indicate the reasons for the differences between the institutions of the eighteenth and nineteenth centuries, but they serve as one of many warnings against regarding our Parliamentary institutions as *semper eadem.*

Essex county, Massachusetts, is not so large as Essex county, England, and its chief town, Salem, possesses but 35,000 inhabitants, yet it has an "Institute" which publishes *Historical Collections*, issued quarterly. Some half-dozen of its numbers have lately come into our hands, and we have derived much interest from turning over their pages. These consist mainly of verbal reprints of documents, sometimes hitherto unprinted, illustrative of the history of New England. The first impressions derived are that American history falls into fairly marked periods. First there is the early colonising period, when religion is to the fore, and most astonishing, we suppose, to the majority of Englishmen would be the pages which tell of a community whose chief interests were the doings of Congregational churches. Yet here are such documents printed as a matter of course as interesting items in the history of the country.

Then follows a period during which commerce, in its infant beginnings, appears uppermost. Quaint stories of "skippers" relating their voyages and adventures, and of old-world commerce in general as carried on in Salem. Then comes the "Revolutionary" period, with its incidents of war as conducted in the colonies which were so soon to become sovereign states. And so we drift down the years till we arrive at modern times, with obituary notices of members of the Institute. Nor let the Englishman suppose that genealogy does not flourish in New England. "Old" families, which can trace their ancestry to English shores, are the aristocracy of the United States, while descent from "Pilgrim Fathers" is the equivalent there of "blue blood" in the mother country.

We are strongly tempted just now to say, "How history repeats itself!" Our fathers knew the Crimean War with its blunders and its final triumph, its "soldiers' battles" and its magnificent, unwarlike deeds; they knew also a Chinese war, the troops destined for which were detained in India to help suppress *the* Mutiny. So we, their children, know a war with similar incidents to those of 1854-55, and following hard upon, just as fifty years ago, we are hearing of trouble in China and Residencies in danger. As we write all England, nay, all Europe, is asking, as in 1857, of women and children exposed to infuriated Eastern rage, "Are they safe?" Yet, of course, there are differences. Our fathers lived from day to day, nay, from week to week for news; *we* live from hour to hour. The telegraph and the multiplication of newspapers adds to the rapidity of events, and the fever of excitement, though no deeper, is higher.

MR. H. G. WELLS COMES BACK TO EARTH.[1]

The adoption of the system of teaching Zoology by "types" has probably done more than anything else to improve biological teaching during the present century. The study of the characteristics of well-chosen representatives of the chief families of living things is held to be the best preliminary training for the student, enabling him as he advances to understand the facts on which current systems of classification are based, and in due course to make those broad generalisations of which biologists are justly proud.

The same plan of proceeding from the special to the general is common, too, in the teaching of pedagogics. The scholastic neophyte is at the beginning of his course of training introduced to the work of typical teachers, and after he has to some extent assimilated the ideas of these patterns the novice is encouraged to himself create and develop plans. But there is a danger that the ensamples and models placed before the student may be too much alike, built on the same general plan, as it were, and give rise to what is already too common a belief, that there is but one way of salvation for the schoolmaster, that, namely, which runs by way of the public school and older university.

With no such intention, as far as we know, Mr. Wells has raised thoughts of this kind by his latest creation, Mr. Lewisham. But it must be said at once Mr. Lewisham does not, nor was he intended to, represent a good schoolmaster. But he comes of a class and was brought up in circumstances so different from those which supply the schoolmasters of our public and grammar schools that one must needs wonder whether there is not a promising recruiting area, at present hardly tried, from which good schoolmasters, with new ideas and ideals, could be drawn. There was the making of a fine leader of boys in Mr. Lewisham.

When introduced to the reader, he is young enough in years —he is only eighteen—but has remarkably clear ideas of the part each individual must take in his own advancement in life. Round his bed-room study were to be found his guiding principles, duly chronicled "in a clear, bold, youthfully florid hand": "What man has done man can do," "Who would control others must first control himself," and the only portrait on the walls at this stage was that of Carlyle. He has not yet passed the London Matriculation, it is true, but then he has designed a wonderful "schema," showing the dates of his B.A.,

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[1] "Love and Mr. Lewisham." By H. G. Wells. 323 pp. (Harper Bros.) 6s.

M.A., and gold medal at the University of London. Everything, indeed, points to a successful career. Even the disadvantages of living on forty pounds a year, non-resident, as the junior master of the Whortley Proprietary School, will be more than compensated by the independence of character and the Spartan simplicity of the material requirements to which he will become accustomed.

And then Ethel Henderson must needs visit her aunt, Mrs. Frobisher, who lives at Whortley and has a boy, Teddy, who goes to the Proprietary School. Lewisham, of course, sees Ethel in the Frobishers' pew under the gallery when he is "on duty" with the boys at church. This is the beginning of the mischief. "Little chins and nose-tips" interfere with Lewisham's translation of Horace in the first chapter, in the second he has found a way of speaking to Ethel, in the third he discovers he is in love, and then follow in rapid succession the unpleasant meeting in the avenue with the headmaster, Mr. Bonover, the scandalous ramble, the neglected preparation, with its natural sequence—a term's notice.

But throughout there is traced, with all the skill for which Mr. Wells is justly famous, the conflict between Lewisham's love and his career. For a time it looks as if all hope of the career is lost—but Ethel goes back to Clapham, and a new era begins.

Lewisham is chosen to become a science teacher in training at the Royal College of Science,

> "and be paid a guinea a week for listening to lectures—lectures beyond his most ambitious dreams! Among the names that swam before his eyes was Huxley, and then Lockyer! What a chance to get! Is it any wonder that for three memorable years the career prevailed with him?" He succeeded, "in spite of the Whortley check, licking up paper certificates indeed like a devouring flame."

Lewisham's friendship with Miss Heydinger, a fellow-student in the biological laboratory, all helps the career, and by-and-by Ethel is forgotten, and the hero seems fairly on the way to any form of success one likes to imagine. But Lewisham one day accepts the invitation of Lagune to be present at a spiritualistic *séance*, with a view to scientific criticism, and there he meets Ethel again, no other than Lagune's typewriter, and as subsequent events show, Chaffery, the medium, is her stepfather. We cannot pretend, if we wished, to give an adequate account of the renewed conflict. Love triumphs. Ethel becomes Mrs. Lewisham, and the man and wife enter upon their new experiences on a guinea a week and a capital of about sixty pounds. The consequent fretting and scheming, added to the inevitable sordidness of life in such circumstances in London, leads naturally to misunderstandings, followed, however, by a subsequent reconciliation, and at the end Lewisham learns he is soon to take up the responsibilities of fatherhood. He is left soliloquising with the old Whortley "Schema," yellow and torn, in his hands—

> "'And yet—it is almost as if Life had played me a trick—promised so much—given so little! . . .'
>
> "'No! One must not look at it in that way! That will not do! That will *not* do.'
>
> "'Career! In itself it is a career—the most important career in the world. Father! Why should I want more?'
>
> "'And . . . . Ethel! No wonder she seemed shallow . . . she has been shallow. No wonder she was restless. Unfulfilled. . . . . What had she to do? She was drudge, she was toy . . .'
>
> "'Yes! This is life. This alone is life! For this we were made and born. All these other things—all other things—they are only a sort of play.'"

Such is very inadequately the general outline of the book, but it completely fails to give any idea of the charm and interest of every page. Mr. Lewisham, with all his faults, will live side by side with Mr. Hoopdriver, well-known to every reader of Mr. Wells' "Wheels of Chance."

The whole book convinces us that there is little or nothing in fiction impossible to Mr. Wells, and we heartily congratulate him upon coming back to the study of human nature. He long ago discovered for us a new world of ideas in the draper's shop; he has now shown that the very ordinary assistant-master is made in the same way as other men, and is tempted in all points like as they are. The book saddens one, it is true, but then so much in life is sad; are not "our sweetest songs those which tell of saddest thought"?

Perhaps the chief interest to most of our readers will be the intimate knowledge of some of the less desirable of a schoolmaster's experiences which the book reveals. But, of course, Mr. Wells has been a schoolmaster. The master of the public school may here learn the ideals and disadvantages of his less fortunate contemporaries, and if the book is understood, the effect will be something quite other than a contempt for them. Lewisham, Dunkerley and Bonover are all types, which are as widespread as schoolmasters themselves, and cannot be disposed of as mere fiction.

Then there is the scholastic agent and his ways. Mr. Wells shows that he knows and appreciates the difference in standing of the different grades of agents, and knows also what goes on in their mysterious offices. He must, we should think, have had personal experiences therein.

> "The scholastic agents to whom he went on the following Saturday did much in a quiet way to disabuse his mind.
>
> "Mr. Blendershin's chief assistant in the grimy little office in Oxford Street cleared up the matter so vigorously that Lewisham was angered. 'Headmaster of an endowed school, perhaps!' said Mr. Blendershin's chief assistant. 'Lord! why not a bishopric? I say,' as Mr. Blendershin entered smoking an assertive cigar—'one and twenty, *no* degree, *no* games, two years' experience as junior—wants a headmastership of an endowed school!' He spoke so loudly that it was inevitable the selection of clients in the waiting-room should hear, and he pointed with his pen.
>
> "'Look here!' said Lewisham, hotly; 'if I knew the ways of the market I shouldn't come to you.'
>
> "Mr. Blendershin stared at Lewisham for a moment. 'What's he done in the way of certificates!' asked Mr. Blendershin of the assistant.
>
> "The assistant read a list of 'ologies and ographies. 'Fifty-resident,' said Mr. Blendershin, concisely—'that's *your* figure. Sixty, if you're lucky.'
>
> "'*What?*' said Mr. Lewisham.
>
> "'Not enough for you?'
>
> "'Not nearly.'
>
> "'You can get a Cambridge graduate for eighty resident—and grateful,' said Mr. Blendershin.
>
> "'But I don't want a resident post,' said Lewisham.
>
> "'Precious few non-resident shops,' said Mr. Blendershin. 'Precious few. They want you for dormitory supervision, and they're afraid of your taking pups outside.'"

Of Lewisham's visits to Messrs. Maskelyne, Smith and Thrums, who dealt mostly with upper-class and good preparatory schools; to Messrs. Danks and Wimborne, "who inhabited a bank-like establishment near Chancery Lane;" to the College of Pedagogues, in Holborn, we will write nothing, but the reader will find them all entertaining, and, if he happens to have any personal experience, true to life.

Nor have we space enough to more than refer to Chaffery's trifling with knavery and the end of his psychic studies; to Parkson with his juvenile notions of women and their place in the scheme of the universe; and to the delightful manner in which Mr. Wells manages, in a sentence or two, to make all the minor characters living and human.

We can thoroughly recommend "Love and Mr. Lewisham" as an excellent piece of holiday reading.

RECENT SCHOOL BOOKS.

Modern Languages.

French Prose of the Seventeenth Century. Selected and edited by F. M. Warren. xvii.+319 pp. (Isbister.) 3*s.* 6*d.* —Owing to the absence of such a book as this, it has been customary to read only the dramas of the *grand siècle* in the upper classes of our schools. This volume contains a convenient selection from the writings of Descartes, Pascal, La Rochefoucauld, Bossuet, and La Bruyère. The editor has written a biographical introduction which contains all that is essential; there is also a good apparatus of notes, which give plentiful evidence that Mr. Warren is fully qualified for the somewhat difficult task he has set himself. The book is well printed and altogether acceptable.

Molière, Le Bourgeois Gentilhomme. Edited by Frederic Spencer. xiii.+172 pp. (Dent.) 1*s.* 3*d.* -Only a short time has elapsed since we were able to praise Prof. Spencer's Primer of French Verse. We then pointed out that it was notable above all for a scholarly flavour which is too rarely found in books intended for schools. The same quality appears in a still more marked degree in the first volume of Molière's plays, which Prof. Spencer has edited for Messrs. Dent & Co., who have printed the text in the manner familiar to those who have seen the Temple Shakespeare. The Notes are prefaced by a short account of the author and the play; they are commendably brief, but contain many happy renderings of Molière's often rather difficult expressions. To those who have been troubled by editions with overloaded commentaries, this pretty little volume will appeal irresistibly. We trust that other plays by Molière will follow it soon.

German Prepositions at a Glance. By C. Kaiser and A. Thouaille. 12 pp. (Sampson Low, Marston.) 1*s.*--It has been recognised before this that the German prepositions are best taught by means of pictures, and many teachers have used those in the Hölzel series. This little book consists of a number of pictures drawn for this same purpose; they lay no claim to artistic excellence, but are ingeniously put together. It is curious to find teachers on the Gouin system having recourse to pictures; one wonders what M. Gouin himself would have said to this innovation.

French Words and Phrases. By J. G. Anderson and F. Storr. vii. + 110 pp. (Rice.) 1*s.*--A convenient series of lists of words with the French and English in parallel columns arranged under such headings as "Relationships," "Class-Room Objects," "Colours," &c. We note a few omissions; thus, if *blanchir* is given, we expect also to find *noircir*; the dog and the mouse appear, but not the cat; *après-midi* occurs in both genders; *gazouiller* might have been added after *oiseau*, as well as *chanter*. Some of the sections are rather long, and subsections might have been introduced with advantage. But these remarks are not meant to detract from the value of the unassuming booklet.

The Practical Sound and Sight Method of Language-Teaching. By H. T. Mark and Fr. Prellberg. *French, Part I.* 63 pp. (Sonnenschein.) 1*s.*-- It is pleasant to see on every side signs that the Reform Method is spreading. The authors "believe that by a gradual development of the vocabulary in association with familiar objects and actions, and a close and careful grading of the grammatical difficulties which a beginner has to face, the learning of the elements of the language will be found to be both easy and interesting." The four pages given to "the method of teaching" contain nothing to which a Reform teacher could object. The chapters are arranged according to the parts of speech, and are indeed "carefully graded." There is, however, rather too much repetition of the same words, which deal mainly with things in the class-room, and the dialogues, therefore, hardly possess sufficient interest; and we would once more express our objection to the introduction in the pupil's book of matter which is intended only for the teacher. The children should not be invited to look behind the scenes.

Classics.

Virgil Aeneid VII.-XII. By T. E. Page, M.A. xxiv. + 479 pp. (Macmillan.) 5*s.*—In this volume Mr. Page completes his edition of Vergil, as we still prefer to write the name. The use of this form is surely no more "pedantic" than that of *i* for *j* in the text which Mr. Page allows himself, though at the same time he refuses the equally correct *u* for *v*. Again, Mr. Page quotes with approval Tennyson's poem which speaks of the "lord of language" who has

> . all the chosen coin of fancy
> Flashing out from many a golden phrase,"

and yet permits himself to speak of *sanguine singultantem* as "an atrocious phrase," adding, "Virgil endeavours to make his descriptions of the details of slaughter artistic and renders them unbearable." (Page 272.) This criticism may be true of the editor's translation of that phrase, but it hardly applies to the original. However, although perhaps Mr. Page is not always happy in his renderings, or in his dicta on matters of taste, yet the edition is decidedly meritorious, and if the notes are not invariably convincing they are generally stimulating. Parallel passages are freely quoted to illustrate style or subject-matter, and there is a good index.

Ovid: Metamorphoses (Selections). By J. H. Vince, M.A. xx. + 113 pp. (Blackwood.) 1*s.* 6*d.*—After a short account of Ovid's life and works in the Introduction, Mr. Vince gives a very concise summary of the chief theories which have been advanced to explain ancient myths, and in an appendix writes a careful and instructive essay on magic in classical literature. The notes form a full and useful commentary on grammar, subject-matter and style. The illustrations are admirable reproductions of ancient examples, of which the "Rondanini Medusa" here shown may serve as an example. An admirable attempt has been made to present the correct forms of words, but occasionally in the matter of "ae" (capital and italic) the printer has been too much for the editor. Finally there is a useful grammatical index and an index of proper names. The general editor of the series of "Blackwood's Classical Texts" is happy in his co-adjutors and publisher alike.

Edited Books.

The Laureate Poetry Books. Nos. I. to IX. Each 48 pp. (Edward Arnold.) 2*d.*—This is a kind of anthology adapted to the junior forms of schools, and for cheapness, good type, and careful selection of matter should prove very useful. All the old favourites for recitation are included; and with them a great deal that deserves to be better known. We are delighted to find many charming children's poems from William Blake printed in this series; for Blake was a genius all too often neglected in his own time and in ours. The later numbers include selections from Browning and Tennyson, and many effective scenes from Shakespeare.

Marmion. Edited by W. M. Mackenzie. 211 pp. (A. & C. Black.) 1*s.*—This edition is well edited, and the notes are admirable. The introduction is brief, but well arranged, and the volume as a whole deserves to succeed. Scott as a poet is perhaps not difficult to edit, but we have seen many worse attempts than this effort.

Milton's Paradise Lost. Books I.-IV. Edited by J. L. Robertson, M.A. 179 pp. (Blackwood.) 2*s.* 6*d.*—This edition will claim extensive recognition and use. Mr. Robertson has performed his task in a very scholarly way, and the chronological notes and introduction are of great value. The editor's remarks upon the structure of Milton's verse are keenly critical, yet lucid and interesting. The subject should therefore present no great obscurity to pupils of average attainments. Two unique features of the work are diagrams illustrating Milton's conceptions of space and of the created universe, and Milton's own prose summary of his poem is fitted into the text as a kind of marginal rubric. Among minor editions of "Paradise Lost" this is deservedly notable.

Ivanhoe. 207 pp. (Bell.) 1*s.*—This is an abridgment which may be found useful in the lower forms of schools. It is illustrated in a manner more striking than artistic, and ought to have some share in stimulating the imagination of young people who cannot yet exercise the function of taste in either literature or art. There is an oppressively juvenile air about the book, but it will probably serve some good purpose in the directions indicated.

The Book of Joshua. By Rev. G. H. S. Walpole. 151 pp. (Rivingtons.) 2*s.* 6*d.*—This book, as the editor explains, is designed to help teachers in primary schools; and so far as matter and method go, it will undoubtedly serve a useful purpose among a hard-worked fraternity. Some things are designedly omitted from the text, and the notes and references are curtailed to a most surprising degree. Perhaps the blackboard lessons given by the editor are the most useful things in the volume, which, however, would be of considerable assistance to teachers in Sunday schools, if they could be persuaded to use it.

As You Like It. (Dinglewood Shakespeare Manuals.) By Stanley Wood, M.A. 52 pp. (John Heywood.) 1*s.*—This valuable little booklet has now reached a second edition, and richly deserves its success. Mr. Wood has revised and enlarged it. The whole of this handy practical series of manuals will give endless "tips" to teachers.

From Blake to Arnold. (Selections from English Poetry, 1783-1853.) 217 pp. (Macmillan.) 2*s.* 6*d.*—Three hands have been at work on this useful volume. Messrs. Pickburn and Brereton are the joint editors of the work primarily undertaken by Mr. C. J. Brennan, and the selections, introduction, essays and notes all deserve high praise. Naturally the first compiler had recourse to accepted anthologies, but he has made his selections with great skill, and the essays prefixed to each poet's work are the outcome of careful study. The general introduction (in two parts, theoretical and historical) is just what such introductions should be—it is as full of philosophy as of facts, and is immensely suggestive. It could hardly be too strongly impressed upon editors of school books on this subject that the only way to make sure that a pupil is gaining a true appreciation of the literature he is professing to study is to regard their tasks with just as much critical acumen as they would apply to historical study, where facts truly considered count for little so long as tendencies are clearly conceived. The notes in this volume are careful and discriminating. It is perhaps a sign of the true insight of the editors that neither Landor nor Ebenezer Elliot is excluded from this compilation.

Geography.

Home Geography, and the Earth as a Whole. By Ralph S. Tarr, B.S., and Frank M. McMurry, Ph.D. xiii. + 279 pp. (New York: The Macmillan Co.) 3*s.* 6*d.* -Some of the best books on geography are now coming from the other side of the Atlantic, and this is one of them. Professor Tarr is favourably known as the author of a couple of excellent text-books of physical geography, and the volume on geography which he has prepared with Prof. McMurry will add to his reputation. The first part (110 pages) is devoted to the description of simple observations of soil, hills, valleys, industries, lakes and other geographical characteristics which form part of every child's environment; the remainder of the book is concerned with the earth as a whole. Two other volumes—one dealing with North America and the third with Europe and the other continents are to complete the series of three; and if they are up to the standard of the present volume they will form as attractive a trilogy as has ever been produced. The text is simply written; the illustrations are numerous and instructive; questions for revision are inserted after every few pages, and lists of suitable reading and reference books are given upon various geographical topics. The book is particularly commended to the attention of teachers preparing pupils for the new Cambridge syllabus of physical geography, or endeavouring to deal with geography rationally instead of regarding it as an assortment of details and tables which no one ought to be troubled to remember.

Mathematics.

Woolwich Mathematical Papers for Admission into the Royal Military Academy for the Years 1890-1899. Edited by E. J. Brooksmith, B.A., LL.M. (Macmillan.) 6*s.*—This is a very useful collection of papers, the questions are not too hard, most of them are of a satisfactory kind, while not a few are really novel and instructive. The subjects comprise arithmetic, Euclid, algebra, trigonometry, conics, and mechanics.

The Universal Solution for Numerical and Literal Equations, by which the Roots of Equations of all Degrees can be expressed in Terms of their Coefficients. By M. A. McGinnis. x.+196 pp.

(Swan Sonnenschein.) 5*s.*—It is a pity that this work did not appear soon enough to be noticed in the "Budget of Paradoxes." Here is a sample of the author's qualifications for criticising and amending the work of Abel: "The sum of the cubes of the first *n* natural numbers, as 1, 2, 3, 4, 5,...,*n*, is always equal to the square of their sum. It therefore follows that if the sum of the cubes of the roots of any equation is equal to the square of their sum, the roots of such equation are the first *n* natural numbers."

REINDEER. (The [illegible] the fore[illegible]d is one-twenty-fifth natural size.)

Elements of Algebra. By W. W. Beman and D. E. Smith. x.+430 pp. (Ginn & Co.) This book is inspired by excellent motives, but requires considerable revision in detail. There is, for instance, a serious error in the proof of the remainder-theorem; the definition of multiplication on p. 41 is eminently unsatisfactory; article 79 is psychologically wrong in suggesting an induction which no elementary student would make for himself or feel to be justifiable; and the "proof" of the summation of an infinite geometrical progression is no proof at all. On the other hand, the treatment of factors is less imperfect than usual; the chapter on logarithms is practical, and the examples throughout the book are well chosen. Another very good feature is the systematic control of results by appropriate checks and verifications.

The Contents of the Fifth and Sixth Books of Euclid. By M. J. M. Hill, M.A., D.Sc., F.R.S. xx. + 144 pp. (Cambridge: at the University Press.) The most important part of this work consists of a careful exposition of the theory of proportion by the method of multiple scales; this is very interesting, and ought to be intelligible to students as well as to experts. Besides this, the reader will find all the most important elementary propositions involving the use of proportion. There are two points in regard to which some criticism might be offered; the meaning of the term "magnitude" is practically undefined, and no serious attempt is made to justify the representation of a ratio by an abstract number. It is probable that Professor Hill considered (not without reason) that a discussion of these points would be too difficult for those for whom the work was intended. Our readers may be reminded that two articles by Professor Hill on the teaching of proportion appeared in THE SCHOOL WORLD for September and October, 1899.

Geometrical Drawing; with Notes and Examples. By W. H. Blythe, M.A. Part II.: Solid or Descriptive Geometry. xii.+193-328 pp. (Cambridge: at the University Press.)—Mr. Blythe has succeeded very well, considering the limited space at his disposal, in giving the essential elements of the subject in a methodical way; in this respect his work compares very favourably with most of its predecessors. Teachers will probably find it convenient to change the order of treatment to some extent, but this will present no difficulty. The unworked examples (to which notes are appended) are taken from Science and Art examination papers.

Science and Technology.

Text-Book of Zoology*: *treated from a Biological Standpoint. By Dr. Otto Schmeil. Translated from the German by Rudolph Rosenstock, M.A., and edited by J. T. Cunningham, M.A. vii.+138 pp. (A. & C. Black.) 3*s.* 6*d.*—Though the opening sentences of this book would lead one to suppose that the language throughout was of a technical kind beyond the grasp of the non-scientific reader, yet, as very soon becomes apparent, the opposite is really the case. The reader of the book is therefore warned to reserve his judgment and not to come to a final conclusion as to the book's fitness for school purposes after reading only a paragraph or two. To read at the very outset that "vertebrates [are] bilaterally symmetrical animals with an internal bony or cartilaginous skeleton" is not encouraging to a beginner, but he will very soon find the style develops into a straightforward and interesting one. The general characteristics of the different animals described take a place of great prominence, and a noteworthy point about the descriptions is that structure is always considered in relation to function. The animals are throughout regarded as living beings, and their internal structure is only explained in so far as it describes their environment and habits of life. The illustrations are numerous and excellent and go far to secure the interest and attention of young pupils. By the courtesy of the publishers we are able to give a specimen. The book should be very useful to teachers of natural history, and where the exigencies of the time-table permit it, the volume will prove eminently suitable to be placed in the hands of the boys.

First Stage Hygiene. By Robert A. Lyster, B.Sc. viii. +199 pp. (W. B. Clive.) 2*s.*—Like its companions in the series to which it belongs, this little volume is very attractive in its "get-up." The printing is good; the illustrations are numerous and generally of a helpful kind. Too much is, however, attempted in the small space which the author has allowed himself. We do not think it is possible to give satisfactorily in two hundred pages the physiology of nutrition, respiration, circulation and excretion; the laws of health; the chief principles of sanitary science; and instructions for practical work in physiology and the parts of elementary physics and chemistry utilised. Yet this is what Mr. Lyster has attempted. But perhaps the syllabus of the examination, as a preparation for which the book is intended, is partly to blame. The idea with which the author set out, namely, to take the physiology of each of the chief organs of the body one by one and to follow immediately with its bearing on the laws of health, was excellent, but he has not made the best of it. For instance, it was surely not the best way of securing the beginner's interest to start with the skeleton and to frighten him with cervical, dorsal and lumbar vertebræ; with phalanges, metacarpals and so on. Long before the end of the first chapter is reached the ordinary evening student will have decided that the subject is far too technical for him. The mistake of the book is that it is too concentrated—too much like an "Enquire within upon everything." At the same time, as far as we have tested its contents, the book is trustworthy, and the student who masters its contents will be sure of passing his examination with credit.

An Introduction to the Study of the Comparative Anatomy of Animals. By Gilbert C. Bourne, M.A. Vol. I. xvi.+209 pp. (Bell.) 4s. 6d.—The order of treatment in this latest addition to the Science Series of Messrs. Bell differs from that of other books of similar scope. The anatomy and histology of the frog are first described in considerable detail, and after some familiarity with biological terms and the nature and functions of cells has been obtained by the student, the cell theory and the division of cells are brought before his notice. And not until this is accomplished does the more systematic treatment of the Protozoa and Cœlenterata begin. Mr Bourne has been led to adopt this order from the results of his own extensive teaching experience at Oxford, and there is much to be said for the plan. The great thing is, after all, to impart correct and satisfactory notions, and if this way of teaching the subject succeeds in doing it, the order does not matter very much. We are glad to notice that the author insists upon the necessity for a sound preliminary acquaintance with the general principles of physics and chemistry before commencing the study of biology. When it is recognised that the problems which present themselves in connection with the study of living tissues are largely to be explained by the application of the methods of the chemist and physicist, no student will be allowed to begin his biological work until he has spent some time in the physical and chemical laboratories. The volume is well-printed, attractively illustrated, and should become very popular.

QUESTIONS IN THE THEORY OF TEACHING.

IN view of the information we gave last month as to subjects which must be studied by candidates for a diploma in teaching at the different British universities which grant them, an examination of the questions set in the theory of teaching, to candidates for the Elementary Teacher's Certificate of the Board of Education, should prove interesting. This certificate examination is for Training College students, or for acting teachers who have not attended such a college. The questions printed below are consequently more difficult than those of the Queen's Scholarship examination, which were given in our February issue.

First Year (*Three Hours*).

[Candidates may answer not more than SEVEN questions. The question in Section I. must be answered by all, but not more than four questions may be answered in either of the other sections].

SECTION I.

(1) Write brief notes of a lesson, using any scheme, on *one* of the following subjects:-

(*a*) Snow (for Infants).
(*b*) The Indian Mutiny (for children of 13).
(*c*) A first lesson in Arithmetical Proportion (suggest your own class).

SECTION II.

(2) Discuss the advantages and demerits of (*a*) simultaneous reading, and (*b*) pattern reading.

(3) What considerations should decide where a child ought to sit in a class?

(4) By what means would you endeavour to make the instruction in a rural school suitable to the scholars?

(5) What is the value of drawing as a subject of school instruction?

(6) State briefly, and illustrate, some of the principles used in teaching Model Drawing.

(7) How would you cultivate Obedience in little children without destroying a proper sense of freedom and responsibility?

SECTION III.

(8) What is meant by the Conversion of Propositions, and what do you take to be the value, to a teacher, of a knowledge of the principles of correct conversion?

(9) Set forth briefly the main steps of the process of induction, with an illustration.

(10) Explain the following: (*a*) Crucial instance; (*b*) An exception that proves a rule; (*c*) Diametrically opposed.

(11) Distinguish, briefly, between an Experience, an Experiment, an Illustration, a Demonstration, and an Observation.

(12) Examine the following argument:—

All the fat, sleek, sound-sleeping men that I have known have been trustworthy. Cassius is lean, hungry-looking, and lies awake at night. He is therefore dangerous.

Second Year (*Three Hours*).

[Candidates may answer FIVE questions from Part A and THREE from Part B. N.B.—If more than FIVE questions in Part A or THREE in Part B are attempted, only the answers coming first on your paper in each Part will be revised. Teachers from Schools for the Deaf may substitute the questions in Part C for three questions from Parts A and B.]

PART A.

SECTION I.

(1) "To know Psychology is absolutely no guarantee that we shall be good teachers." Discuss this.

(2) Examine, on educational grounds, the statement that "seeing is believing."

(3) Why, and in what sense, is it advisable to make the teaching of morality as concrete as possible?

(4) How would you use "Playtime" as an agent in the formation of character?

SECTION II.

Candidates are advised to confine their attention to the author they have studied.

Either (Plato)

(5) Discuss Plato's views of the function of poetry in education. What principles should guide you in choosing pieces for recitation?

(6) What does Plato say about the influence of surroundings on character? Apply his advice to elementary education at the present day.

(7) What are Plato's criticisms of the popular stories about the gods in his day?

(8) Give Plato's definitions of justice, and give briefly the method by which he obtains it.

Or (Frœbel)

(9) How does Frœbel explain children's longing for stories of human life and for fairy tales?

(10) What conditions ought a good Kindergarten game to fulfil? Describe one, and show that it fulfils these conditions.

(11) How would you apply Frœbelian principles and methods in the education of older children?

(12) Explain Frœbel's views on the importance of Mathematics in education.

Or (Locke)

(13) Explain and criticise Locke's system of physical training.

(14) Discuss Locke's views on the futility of punishment for childish faults. How should such faults be amended?

(15) How far is Locke's programme of studies adapted to the needs of elementary schools?

(16) Locke disparages indiscriminate "learning by heart." What exercises of the kind does he commend? How should his advice be followed in choosing passages for repetition by scholars?

PART B.

(17) How can discipline be used so as to train without repressing energy?

(18) What common ailments do you consider incidental to the profession of teaching? By what precautions would you evade them?

(19) What are the chief difficulties in the way of regular attendance? How can teachers (1) encourage regular attendance, (2) ascertain the cause of irregularity?

(20) By what signs would you recognise fatigue in a class? How ought lessons to be arranged so as to minimise this effect?

(21) (*a*) What entries must be made at the close of each week in the Register of Summaries?

(*b*) State the rule for registering the attendance of scholars absent from their own schools, but attending a centre for manual training or cookery.

(22) How is the "average attendance" calculated? How can it be used to test the regularity of attendance correctly? Why is it useful to ascertain the "average number enrolled?"

PART C.

FOR TEACHERS FROM SCHOOLS FOR THE DEAF.

[These questions may be substituted for Part B.]

(1) How can you induce deaf children to use language in communicating with each other?

(2) Deaf children are sometimes described as suspicious and malicious. Discuss this statement.

(3) What instruction should be given to deaf children during the first six months of their attendance at school?

Third Year (*Three Hours*).

[Students may not answer more than FIVE questions, which must be taken from one Section.]

SECTION I.

(The development of Educational Theory in Europe since the Renaissance.)

(1) What effect had the reintroduction of Greek studies into Europe on education generally?

(2) Comment briefly on the contributions made by Roger Ascham to educational theory.

(3) What contributions were made by Milton and his friends to the theory and practice of education?

(4) In what way did the following opinion, expressed at the beginning of his "Emile," affect Rousseau's educational views: "*Everything is good as it comes from the Creator; everything deteriorates in the hands of man!*"

(5) What were the *Little Schools*, and with what purpose were they founded?

(6) What weak places in Pestalozzi's theories were exposed by his practice at Burgdorf and Yverdun?

(7) What is the significance of the contributions made by Jacotot to the theory of teaching?

(8) What contemporary circumstances contributed to the success of Spencer's views on the relation of "Science" and education?

SECTION II.

(Ethics and Psychology in relation to Teaching.)

(9) What use can be made of Affection as an educational basis?

(10) Compare the scope and limits of home and school training respectively in the formation of character.

(11) Describe and estimate the effect of Imitation on the formation of character.

(12) What is "sound judgment," and how can education help in its development?

(13) In what sense can it be said that knowledge is organic? What bearing has the fact on the practice of education?

(14) What practical service, if any, is rendered to educational theory by a parallel drawn between the development of the race and of the individual?

(15) On what grounds, and by what means, would you make the instruction of older children more analytical or abstract than that of younger children?

(16) Show whether a profitable parallel can be drawn between the Syllogism and the formal "steps" of teaching as set forth by Herbartians.

SECTION III.

For Candidates who by permission of the Board of Education have spent their third year in a Foreign Country.

(*State the name of the Foreign Country which you have visited*). *The questions are to be understood as relating solely to that country.*

(17) What official classification of schools obtains, and what classes of the community use each kind severally?

(18) What methods have you seen employed for the conduct of Continuation Schools, and what means are taken to secure the attendance of scholars?

(19) Describe any associations formed for the purpose of securing public interest and co-operation in education.

(20) Describe carefully the procedure followed in the teaching of any particular subject which struck you as worthy of imitation.

(21) On what principles are the children classified in the schools which you have visited?

(22) By what circumstances, and under what authority, is the curriculum of schools, both primary and secondary, determined?

(23) What means are taken for the training of teachers, and how do these differ from the means employed in our own country?

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Diplomas in Education.

IN connection with the interesting article in the July number of THE SCHOOL WORLD on "How to secure a Diploma in Teaching," with a brief description of the various prospectuses issued by the different bodies granting secondary diplomas, it is worth while considering how many persons, the majority presumably schoolmasters or schoolmistresses, have already availed themselves of the opportunities offered.

We follow the order in which the various schemes were considered in the article referred to.

Oxford held its first examination in December, 1897, and since then two a year, in January and June. Up to the present, therefore, five examinations have taken place, and at these 33 men and 15 women have satisfactorily passed. Of these 21 men and 5 women have obtained the full diploma, that is, in addition to the written examination in Theory, History and Practice of Education, have also

(1) Gone through a course of practical training at Oxford and given proof of their ability to teach, and

(2) Obtained a certificate of ability to maintain discipline from the head of a school approved by the Delegacy of Local Examinations, in which at least 100 lessons have been given.

Cambridge holds two examinations a year, in June and December, at which candidates can also be examined for certificates of practical teaching. As the statistics are of interest, we give them from the time of the first examination in 1880 to the end of last year:

Years.	MEN.			WOMEN.			Total.
	Theory and Practice	Theory only.	Total.	Theory and Practice	Theory only.	Total.	
1880-1884	5	10	15	93	26	119	134
1885-1889	9	4	13	231	33	264	277
1890-1894	1	20	21	354	23	377	398
1895-1899	7	10	17	611	35	646	663
1880-1899	22	44	66	1289	117	1406	1472

London began to hold examinations in the same year as Cambridge, but only examines its own graduates. The number of successful candidates during the same periods as those considered in the case of Cambridge are: men, 7, 2, 10, 7, and women, 1, 5, 27, 18, giving a total of 26 men and 51 women.

Durham has held one examination a year, at Easter, since 1896, 8 candidates being successful.

Victoria has held five annual examinations, in July of each year, which have been passed by 10 men and 4 women.

The College of Preceptors, which was, as is well known, the pioneer in granting diplomas in education, held its first examination as long ago as 1846. From that time to the present, statistics give us as having passed the various examinations:—

		Members.	Non-members
Men,	Associate	192	789
	Licentiate	87	61
	Fellow	45	2
Women,	Associate	163	419
	Licentiate	10	16
	Fellow	5	1

In addition to the written examination, since 1894 the College of Preceptors has held a Practical Examination for Certificates of Ability to Teach, of which 17 men and 10 women have availed themselves.

F. G. L. BERTRAM.

Oxford,
July 16th, 1900.

Teachers and Teaching Viewed from Outside.

As a member of a profession concerned with the care of the mind as well as the body, and as a parent interested in educational methods, I should be glad if you would permit me to make a few remarks upon some points which have been raised in your correspondence columns, and upon others which have been brought before me from time to time by contributions to your pages. My excuse for intruding into affairs which do not directly affect me must be that I have subscribed to your interesting periodical from its commencement, and that an outside view sometimes has peculiar advantages.

In his letter upon the future of Assistant-Masters, it seems to me that Mr. Paskins has stated bluntly but truly the reasons why their position is so unsatisfactory. Any profession into which it is possible to enter without special training, and of which anyone may become a member without possessing a diploma or other certificate of proficiency, must of necessity be powerless and disorganised. The British Medical Association, or the Incorporated Law Society, are powerful because they only admit qualified men into membership, and are able to bring pressure to bear upon anyone who acts against the interests of the other members of the profession. In the teaching profession, however, there does not seem to be a recognised standard of efficiency for secondary school work, and therefore it is impossible to organise an association able to insist upon a line of action and to impose penalties for the neglect of rules drawn up for the common welfare.

A man is not made a teacher by a diploma any more than a practitioner is made a successful physician by a certificate of qualification, but in each case the document provides evidence of the knowledge of principles and the ability to apply them, and furnishes a more or less definite standard of efficiency. There are men who are able to treat patients, although they are unqualified in the professional meaning of the term, but such men are not legally recognised; and my opinion is that among secondary schoolmasters there should be some similar means of distinguishing between unqualified and qualified men.

At present, I understand that there is no Register of Teachers in secondary schools. But as such a Register would be a very valuable means of defining the members of the profession, every effort should be made to get it prepared as soon as possible. Of course, the Register will not be exactly on the same footing as the Medical Register, because I presume that all acting teachers will be placed upon it whether they are good teachers or not; but the day must come when a place upon the Register will only be obtained by teachers possessing some documentary proof that they know something of the principles of teaching and are able to prepare and give lessons upon the subjects they profess to teach. No teacher in an elementary school, even at the present time, is permitted to give instruction until he has satisfied the inspector that he is able to do so, in addition to which every certificated teacher must pass an examination in the theory of teaching. I do not wish to make invidious comparisons, but to me it appears absurd that, while the Government insists upon a standard of efficiency (what it is worth is another matter) for teachers in board and national schools, there is no system whatever of inquiring into the capability of teachers in secondary schools.

Against these remarks it will doubtless be urged that the headmasters of our public schools are perfectly competent to select efficient men to teach the various forms and subjects. I do not for an instant doubt this, but at the same time I say that there are hundreds of teachers in small secondary schools who are not qualified either by experience or knowledge. These men (and women) are permitted to give instruction to the children of us professional people who do not care to send our children to Board Schools, though they could not obtain a certificate which would qualify them to teach in such schools.

I could give many cases of incompetency which have come under my notice as the father of boys who have attended secondary schools at various places, and also which I have seen in schools that I have visited. I still find advertisements of schools in which the qualifications of the principal or of some assistant are contained in the letters F.S.Sc., or First B.A. These symbols do not impress me, but judging from the success of some of the schools, there are people who believe in them. My contention is that schools of this kind should be compelled to submit to inspection, and that teachers who mislead the public should be denounced as quacks by the qualified members of the profession.

I read in your pages of rational methods of teaching languages, arithmetic, geography, history, and other school subjects, but only once in my experience have I come across a school in which an attempt was made to carry out these methods, and that was in a private school. My boys have all had to learn French as I did, by the grammatical method; and after six years of work they are unable to put together the simplest sentence of everyday conversation or to understand a commonplace remark in French. They received their lessons from a text-book, and a master who had never been in France, and I regard the time they spent upon the subject as almost wasted. As to arithmetic, no improvement appears to have been made. Boys are made to work long division sums in which the dividend consists of fifteen to twenty figures, when they cannot do the simplest problem; and they are given intricate calculations in compound arithmetic while they are unable to state the amount which remains when, say, 3½d. is subtracted from 8d. Geography is still taught by learning lists of mountains, plains and valleys, of ports and lakes and capes and rivers, while the pupils do not know the cardinal points, and are unable to understand a map of their district or name a single valley or plain or tributary they have seen for themselves. Spelling is taught by making the pupils write lists of long words of which they have not the faintest conception as to the meaning, while the same pupils could not write a simple sentence without several mistakes in orthography. And English grammar is taught by learning rules instead of applying them. In saying this I state facts from my own knowledge, and I have no doubt that my experience has not been exceptional. There are, I hope and believe, a number of secondary schools in which these unreasonable methods of instruction are not followed, but I have been unfortunate enough not to find them in the half-a-dozen places where I have brought up my family.

There is one other point upon which I wish to make a few remarks, and that is the number of hours of mental work which should be done by boys of various ages. In most schools I find that the extreme limits given by Dr. Dukes, and supported by Dr. Shelly in his most valuable articles contributed to your columns last year, are greatly exceeded. Moreover, I find that though home-work has been condemned over and over again by medical officers and others interested in school hygiene, it is the almost invariable rule to give such work to pupils in secondary schools, though it is not permitted in elementary schools. School doctors know that any interference with the time-table is usually resented, but where there is a consensus of opinion upon a subject some action should, I think, be taken upon it.

My letter has extended to a greater length than I at first intended, and I am afraid that it is not altogether complimentary. A frank criticism from the standpoint of a layman ought not, however, to do any harm, and I can assure you that my sole desire for making it is that members of a profession for which I have the deepest respect may see some of the weak points in organisation and method and be led to strengthen them.

A. R. H.

Thornton Heath.

The Employment of Pupils' Leisure.

I FELT a year ago the same difficulty as your correspondent. He may like to hear the experiment we are now trying. A wilderness of weeds went by the name of "playground"; for this purpose it was useless here, as we have a playing-field in Christ Church meadow and a knockabout yard at the back of the school house. I have therefore been making gardens for the boys; each has a piece (if he wants it), and is expected to be responsible for it. We started from the very beginning in September; weeding was a long job, digging harder, dividing up demanded a guiding head, and begging other people's "throw-aways" was effective in fairly stocking the place for a commencement.

The most useful point for school purposes is that not 6d. has been spent in labour; everyone took a share in starting the plan until the allotment of patches was finished. Then each boy's responsibility was concentrated on his own selected piece. Naturally the worst choices were left for anyone who would take what went begging. Happily, my colleague, two chaplains, the matron and myself, all take to the scheme, and we make it our business to keep quietly going the enthusiasm of our neighbours. Without this, the gardens would soon lose their interest.

But, at present, we find the short-sighted, the unathletic and the general loafer (as well as the midget, who is small enough to get easily down to his work), all quite keen in their sense of possession.

Tools and apparatus to facilitate watering and gravelling are necessary in abundance, but I don't think we have spent more than £11 on these. Every two months or so we have to devise dodges for re-arranging beds, &c., and so keep the keenness alive and busy. But this is not exacting of ingenuity, and we are thankful (after a succession of defeats in cricket, or while the football ground dries after much rain) to change our job and get something else talked about besides averages and bruises.

I am going to see about a carpenter's bench for my next diversion, and later on a general museum to store interesting odds and ends. Possibly in the dim future I shall light on a second-hand printing-press; we have a photographic dark room; one tremendous attraction that never fails (chiefly because it has the element of secrecy) is the preparing of costumes for the terminal play. The performance takes 35 minutes about, the preparation is marvellous, and spreads over weeks, especially if an enterprising chap screws a story from *Chums* into three or four scenes.

I want ideas, and shall be glad if any of your correspondents will give me warning of possible risks in starting a carpenter's shop, a museum, or a printing press.

J. HOWARD SWINSTEAD.

Cathedral Choir House,
Oxford.

THANK goodness! the days are passing in which every boy in our schools is crammed with the same food both physical and mental, and the time has come when individual tastes and capabilities have a demand upon the consideration of the educationist. Every one who has had anything to do with the education of boys has experienced the same difficulty as Mr. Wharton-Tiver; but careful observation and knowledge of boy-life have solved the difficulty. If Mr. Wharton-Tiver is really serious in his request published in your June issue, the following remarks may help him out of his difficulty.

In the school with which I am connected we have, in order to encourage an interest in things outside the ordinary school work, cricket, football and chess teams, a camera club and a number of gardens. Besides these, once a year there is held an exhibition of work done and collections made out of school. The exhibits comprise wood carving, collections of geological, entomological and botanical specimens, stamps, model machines and photographs. The school library supplies books of reference, and the boys are encouraged to make use of these. It is sometimes hard to get intellectual boys to take an interest in anything which will get them out into the open, but much depends upon the man who undertakes the work.

Should Mr. Wharton-Tiver require any further information on this subject I shall be pleased to hear from him.

J. H. BEECROFT.

County School,
Grove Park,
Wrexham.

Shall we Continue to Teach English Grammar?

IN answering this question in the negative, there are one or two points that I should like to bring before readers of THE SCHOOL WORLD, and I hope those of them who are form-masters or specialists in English will set forth their views on this matter.

(1) *Very few teachers in secondary schools are qualified to teach the subject.*—It generally falls to the lot of the form-master, whose knowledge of English grammar is, as a rule, subsidiary to, and a bye-product of, his Latin grammar. Occasionally his knowledge is practically *nil.* It has always been assumed that anybody can teach this subject. The teaching suffers in consequence.

(2) *For disciplinary purposes Latin is superior.*—To teach English grammar properly more time is necessary than is allotted

to it in the ordinary time-table. It is, to a great extent, because boys are taught Latin three or four times as often as they are taught grammar that the educational value of the former is considerably higher.

(3) *The text books on grammar are, on many points, at variance.* Every teacher must have realised the "disagreements of the wise" in this respect. I need mention a few points only. What is a conjunctive adverb? Can *but* be a relative pronoun? What is a preposition? What is a prepositional phrase? Is *each* a pronoun or an adjective? Distinguish between complements and complex objects, &c, &c.

(4) *The teaching of essay writing is a much more pressing need.*—I would suggest that the two "periods" per week usually devoted to grammar be given to essays. Essay writing at present is usually considered as a means of relaxation for the teacher, the result being the inability of most boys to put their thoughts into words with any semblance of development, order or punctuation, and the too frequent appearance of such announcements as "The English Essay prize has not been awarded."

As will be seen, I have given merely a sketch of some of the points that may be made in favour of the abolition of the teaching of English grammar. Personally, I should like to have the same facilities for teaching it as are at the disposal of the teacher of Latin. But the teaching of the mother-tongue in our country is sadly neglected. They manage this matter better in Germany.

E. W. HURST.

Nonconformist Grammar School,
Bishop's Stortford, June 29th, 1900.

Time Table for Cambridge Local Examination.

IN reply to the inquiry made by D. G. in your July number, I consider it unnecessary for a pupil (aged 14), of average ability and attainments, to work longer than twenty-two hours a week in order to pass the Junior Cambridge next December. Deducting five hours for preparation of lessons, I should distribute the remaining seventeen hours as follows:—

Examination Subjects:—

Arithmetic	4½ hours.	Shakespeare	1 hour.
French	3 ,,	Grammar	1
Scripture	1½ ,,	Dictation	½
English History	1½ ,,	Composition	½
Geography	1½ ,,		

Non-examination Subjects:—

Latin 1 hour; Mythology ½ hour; Roman History ½ hour.

The time-table I should propose would be the following:—

TIME.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
9-9.45	Arithmetic	Arithmetic	Arithmetic	Arithmetic	Arithmetic	Arithmetic
9.45-10.30	Scripture	French	French	Scripture	French	French
10.30-11	Recreation					
11-11.30	English History	Geography	English History	Geography	English History	Geography
11.30-12	Latin	Eng. Grammar	Shakespeare	Latin	Eng. Grammar	Shakespeare
12-12.30	Mythology	Dictation	——	Roman History	Composition	——

It would be advisable, during the last four or five weeks before the examination, to omit non-examination subjects, substituting French for Latin, Geography for Mythology, and English History for Roman History, in the above plan.

A. M. BUTCHER.

Flook House Collegiate School,
Taunton, July 2nd, 1900.

The Commercial Education of the Boys of Paris.

DURING a recent visit to Paris I was enabled to see much of the commercial education given to the boys of the middle and lower-middle classes in the Ecole Commercial of the Avenue Trudaine, in the commercial departments of the Ecoles Primaires Supérieures, and in the Institut Commercial of the Avenue de Wagram. Of these, the first is controlled by the Chamber of Commerce, Paris; the second by the Municipality. The third is a private undertaking conducted by a limited company.

The curricula of all three schools are essentially practical, Latin and Greek are omitted entirely, and book-keeping, French, Modern Languages, Commercial Arithmetic, Commercial History and Geography are the main subjects taken.

Great attention is paid to Modern Languages, which are taught by masters who have a thorough colloquial knowledge of the language they teach. The main object is to enable the scholars to write a business letter, and to converse in the foreign language as soon as possible. Hence great attention is paid to conversation, to a knowledge of commercial and technical terms, to accuracy of pronunciation. The language in question is always employed as much as possible in giving the lesson, and boys are urged to spend their holidays abroad and to correspond with boys in foreign schools. Much less attention is paid to translation than in England, and it did not appear to me that the subject matter of the authors was regarded as important. The general result was that the boys possessed far greater facility in conversation than is the case in English schools, but it seemed to me that the teaching rather lacked foundation, and tended to become mere memory work.

Science is treated differently in the various types of schools. In the Ecoles Primaires Supérieures considerable attention is devoted to it, and fairly advanced practical work is attempted. At the Commercial School of the Avenue Trudaine the science teaching consists of lectures on Natural History, Chemistry or Physics given twice a week to the older scholars. At the Institut Commercial science as such is not taken.

The authorities of the Institut Commercial—the object of which is to prepare boys to take an active part in foreign trade—have arranged three special courses of considerable interest. The "Etudes des Marchandises" is a course dealing with the chief articles of commerce, their properties, the methods of cultivation, chief markets, &c. This course includes the consideration of the commoner chemical products, and so makes up to some extent for the absence of science from the curriculum. Visits are paid regularly to the chief buildings and manufactories of Paris, and careful reports of these are afterwards written and illustrated with sketches of the most important apparatus used and the chief objects of interest seen during the visit. The list of visits paid is most varied, and includes visits to the Louvre on the one hand, and to manufactories of playing cards and bakeries on the other. The third of these special courses is the "Cours d'Exportation," specially designed to make the boys familiar with foreign correspondence, methods of exchange, &c. This course traces the history of a commodity from the time it leaves the manufactory until it reaches the user. The scholars execute the various documents required in four languages (German, French, English and Spanish), consider the causes of variations of price, such as carriage by land and sea, customs dues, &c., and discuss the possibility of developing new districts and opening up new branches.

While the education is thus essentially practical, an attempt is made to give as wide a mental training as possible, and this is effected partly by the Preparatory Courses which have been arranged at the Institut and the Ecole Commerciale and by the necessity of devoting two years to general school work before joining the commercial department of the Ecoles Primaires Supérieures. With the same object much attention is devoted to French Literature, to History and Geography, while the elements of Commercial Legislation, of Political Economy and similar sciences have a like tendency. But the general effect is that so much work is attempted that the boys are greatly overworked, and I heard repeated complaints on this account.

I was greatly struck by the great public interest shown in commercial education, not only by the Ministries, by the Municipality, and by the Chamber of Commerce, but by the public generally. Scholarships tenable at the commercial schools are given by the chief firms of Paris, and many business men in filling up vacancies on their junior staff give the preference to boys who have followed such a course of commercial education as I have described. I was assured that the demand far exceeds the supply, and in consequence boys who have passed through the commercial schools find no difficulty in securing posts when they leave.

W. Edwards.

County School,
Gowerton,
July 2nd, 1900.

On the Teaching of English.

As a teacher of more than thirty years' standing, I may, perhaps, offer you a few suggestions on the above subject. First, the divisions, "Grammar, Composition, Literature," bear discussion; or at least others should be added. But I will not stay for that now. Next, as to the teaching of these three branches of the subject, I have no hesitation in saying that almost everything depends upon the method and the teacher; but, however gifted he may be, a teacher without experience will probably do more harm than good—such harm, for example, as making pupils learn pages of that pernicious stuff known as "grammar." On the other hand, a language-lesson, the writing of a short essay, or the studying of a piece of good literary art, may be made profoundly interesting and supremely useful to all pupils, whether their ages are 8 years or 18; and the language-lesson should always be based on good poetry that has been either learnt by heart or thoroughly read. All these subjects should begin at the same time, and I have suggested 8 as the lower limit of age; but, descending to particular cases, many little ones of 5 or 6 are delighted and profited by such instruction.

The gain secured by beginning early is enormous. Grammar (I will use the term at present) is the only science that can be *immediately* studied by young pupils; and on many other grounds it is by far the most important to set out with. Next, composition supplies them with vocabulary and power of expression, and develops the imagination; and the literary-art lesson is their first introduction to what may reasonably be called the higher life.

This brief expression of opinion I will now endeavour to support by a partial record of actual experience.

Many years ago, when I was second master in a grammar school, a young man called upon me and said he wished to be educated. My experience in teaching was already considerable; I had taught all but very young pupils, and had prepared for most examinations. At the grammar school I was taking the advanced English and some of the classics. We had the usual grammars, composition-books and annotated texts, and examination results were always satisfactory.

But my visitor set me thinking. His education was almost *nil*, for he had been in business from the time he learnt to read; and now, having come into a small fortune, he wished to improve himself. Here was a problem. My new pupil had scarcely heard of a verb or a sentence, and had read very little; however, he was fairly intelligent, and I shall always be grateful to him for having directed my attention to methods of teaching.

How we proceeded with our first few lessons I do not care to recollect, but I fear that, like existence to the poet, they were all a muddle; and the object of this part of my letter is to tell you, with much diffidence, how I should proceed if such a pupil came to me now. Indeed, my best plan will be to give you an imaginary sketch, at least of a portion of our first lesson which, with a few modifications, would serve also for the middle forms in schools. I may note that a blackboard is indispensable; also that the school class would be provided with copies of a poem, and with note-books.

"You have come to me to be educated, not to be prepared for an examination? Well, that is fortunate, for it makes all the difference. And what do you understand by *education?*"

"I hardly know; but I want to learn many things that you can teach me. I want most of all to be fitted for good society."

"Possibly you would also like to be fitted for your own society, if I may so put it. But do you happen to know what the *word* education means? I expected not. Yet the original meaning of the word itself will help us a little; and by-and-by I dare say we shall be glad to know more of the history of words. Well, *education* meant originally 'a drawing forth,' and, as a fact, I shall draw you forth; I shall ask you a good deal more than you ask me; I shall expect to get much more out of you than I put in, or, to take a figure from gardening, I shall help to draw you forth from the ground; I shall dig and water and prune, and so on. In other words, I shall not so much aim at supplying you with the materials of knowledge as at telling you how to make the best use of such materials.

"Education, then, is a drawing forth and training of our finer faculties. Next we ask, what are these faculties? Speaking roughly, life is twofold; there is the bodily life and the mental life. With the physical or bodily life we have nothing to do; only I may tell you in passing that, in the long run, a sound mind implies a sound body, and no man who neglects fresh air, exercise, temperance, and those other requirements of nature, can expect to improve or even preserve his vigour of mind.

"And now for our mental, our thought-life—I might almost say, our word-life. Even thus early you will recognise the importance of words; already you have acquired a stock of them. When you think, you think in words; when you want to tell me what is going on in your mind, you use words. It is scarcely too much to say that in words we mentally live and move and have our being; I shall therefore have a good deal to say about words and the thoughts we build with their aid. Indeed, we will turn aside for a moment and get a first glimpse of this subject of thought-building. In order to build a house, we require first of all materials—bricks, stones, wood, mortar, and the rest. But these are not enough; we shall want also tools, and we must know how to use them. Next, we must practise building for a long time; and lastly, we must have seen houses already built, and, if possible, the best specimens of their kind.

"Let us now put this down in tabular form, having on the left these departments of house-building, and on the right the corresponding departments or requisites of thought-building:—

Requisites of House-Building.	Corresponding Requisites of Thought-Building.
(1) Materials (stone, bricks, &c.)	(1) Vocabulary.
(2) Tools, and knowledge of their use.	(2) Grammar.
(3) The practice of building, including taking to pieces for purpose of discerning structure, &c.	(3) Composition; its two branches.
(4) The study of houses already built.	(4) Literature.

"Another day we must return to our subject of education and the mental life, and construct another table; this Table of the Classes of Words, sometimes whimsically known as the 'Parts of Speech,' you will take away with you and just read once or twice at home, and bring it when you come again. The remainder of our lesson to-day must be occupied with something more immediately necessary to our purpose. We will begin with the last of these departments of Thought-building, and look at a house already built; and we may as well select some handsome structure, such as this poem by the poet Gray, the Elegy Written in a Country Churchyard. I will recite to you a few stanzas and explain them a little, then you shall read them to me; and when you get home, you can commit them to memory, and read over the notes you have taken down. At present you will have nothing but poetry to learn by heart.

"You ask me, 'What is poetry?' That question also must be answered further on. To-day I will only ask you, 'What difference do you notice between the language printed in your book and the language of our every-day life? Any one point of difference will be enough for the present.'" At this stage I must discontinue the imaginary lesson. Answers will be various:—"It is prettier;" "It rhymes;" "It is in lines," &c., &c. We select one of these, and discuss it for a few minutes. Then, after some remarks on the poem as a whole and its title, the recitation follows, and then a *conversational* commenting on the stanzas to be learnt by heart. This may be made most interesting, especially by careful observance of the principle, "teach by asking questions." At present the teacher will decide what notes should be taken down. Then the pupil reads the poetry very slowly. To conclude, he is supplied with the Table of the *Classes in which words are arranged according to their use*, or is directed to copy it neatly; also he is to read it through three times during the interval. Thus he begins his lessons in the Structure of Language, or a branch of Department II. of the first table.

THE SECOND LESSON.

The poetry that has been learnt is first written down from memory, attention being paid to arrangement, punctuation, capitals, &c. Marks may be given. It is thus the first exercise in composition. Then it should be repeated orally. It is now ready as material for the lesson in the Structure of Language. *No English grammar should be used*, at least not for a long time; all that is required is the Table or Chart of the Classes of words, to be followed at intervals by a very few rules, notes, and definitions; and, of course, plenty of blackboard illustration. If an examination of the usual kind is in prospect, a grammar - I might say, cramming—is, perhaps, unavoidable.

There now follow a few questions *on the text* of the poetry as well as on the notes; again marks may be given. Then, instead of a new literature lesson, it is well to begin composition, which should be taken alternately with the literature. This lesson will vary much more than the others; if young, the pupils will write what they remember of a short story that has been read; if more advanced, they construct an essay from hints supplied conversationally; but many other expedients are available. The lesson in the Structure of Language, which occupies the latter half of the hour, should be repeated daily, as also should the learning by heart of some portion of poetry.

It will readily be understood that this letter is the merest beginning of what should be a series of articles. Model lessons or courses of lessons might be sketched in all the branches of English teaching, such as the twelve departments of the so-called grammar. These lessons would serve to illustrate the teaching of English better than any treatise could; for example, as they proceeded it would appear that the structure of language can be taught easily and quickly by a scientific method to the dullest of pupils; that without the knowledge of analysis thus easily acquired no pupil can "parse" a sub-ordinate conjunction or punctuate a passage. It would further appear that, without such preparation in English, no pupil should attempt Latin or Greek, nor, indeed, any modern foreign language. Let the principles be taught with English symbols, and then the foreign symbols may be dealt with intelligently, and the customary "haphazard" methods become totally discredited. Much also might be discovered in regard to the relation between literary art and history, that subject partly scientific, partly artistic; much in respect of the two branches of composition, the study of philology, the writing of verse. But merely to enumerate such heads would be impossible within the limits of this letter, and I will therefore conclude for the present in the hope of being able some day to return to the subject.

M. L.

Clifton, Bristol.

OUR CHESS COLUMN.

No 20.

DR. CONAN DOYLE, in a letter to Mr. Bennett Burleigh, the *Daily Telegraph's* war correspondent, tells how he came across a dead soldier near the Vet River. He belonged to the New South Wales Mounted Infantry, and his horse and rifle were gone, but by his side, on his water-bottle, was placed a single red pawn. The other chessmen were in his haversack, out of his reach. The poor fellow had bled to death; in all probability he had intended amusing himself with his favourite game until assistance should come. But Death checkmated him.

"In the game of war," says Carlyle, "the pawns are men."

and other writers have noticed the many points of similitude between chess and war.

Mr. Staunton quotes (in his "Chess Players' Handbook," p. 49), from General Jomini's "Traité de Grand Tactique," Bonaparte's conception of the art of attack. "First, the art of disposing the lines of operation in the most advantageous manner; secondly, in a skilful concentration of the forces with the greatest possible rapidity upon the most important point of the enemy's line of operations; and thirdly, that of combining the simultaneous employment of this accumulated force upon the position against which it is directed."

Dr. Lasker has again proved himself the best of the world's chess players. In the Paris tournament just concluded he was easily first. This tournament has been noteworthy in many respects, and in none more than the unexpected success of the young American master, Marshall, who, it will be remembered, came out first in the one-round tournament at London last summer.

The following is an interesting game in which he beat his fellow-countryman, Pillsbury. We shall make use of it to illustrate our novel competition, particulars of which were announced in the June and July numbers. It is a Petroff Defence, purposely chosen by Black, because he knew his opponent would play 3. P—Q4.

	WHITE.		BLACK.
	Pillsbury.		*Marshall.*
1.	P—K4.	1.	P—K4.
2.	KKt—B3.	2.	KKt—B3.
3.	P—Q4.	3.	P—Q4.
4.	KP x P.	4.	P x P.
5.	B—B4.	5.	B—Kt5 (ch.).
6.	P—B3.	6.	Q—K2 (ch.).
7.	B—K2	7.	P x P.
8.	P x P.	8.	B—QB4.
9.	Castles.	9.	Castles
10.	P—B4.	10.	R—K1.
11.	B—Q3	11.	B—KKt5.
12.	B—Kt2	12.	Kt—K5.
13.	QKt—Q2.	13.	Kt x P.
14.	R x Kt.	14.	B x R (ch.).
15.	K x B.	15.	Q—K6 (ch.).
16.	K—Kt3.	16.	Q x B.
17.	K x B.	17.	R—K7.
18.	K—R3.	18.	Kt—Q2.
19.	R—B1.	19.	P—KR4.
20.	Q—B2.	20.	Kt—B4.
21.	P—Kt3.	21.	P—KKt4.
22.	P—Kt4.	22.	R x Kt.
23.	Q x Q.	23.	R x Q.
24.	R—B3.	24.	P—B4.
25.	K—Kt2.	25.	BP x P.
26.	Kt x P.	26.	R—Q7 (ch.).
27.	K—Kt3.	27.	R x B.
28.	P—KR3.	28.	R—KB1.
29.	P x P. Resigns.	29.	KR—B7.

On the completion of Black's twelfth move the forces are fairly equal.

White goes wrong on his thirteenth move, and by move 19 Black threatens mate in two. But White has now a lost game in any circumstances.

There will be no competition this month, as most of our competitors will probably have forgotten to take their chessmen away with them to the seaside or elsewhere. Pleasant holidays to all.

Result of July Competition.

E. H. Kettle obtains four marks. A pocket chessboard, with men, has been sent to him.

Messrs. Poyser, Dick, Leonard, and Russell obtain three marks each.

The leading scores are now as follows :—
Thirty marks : Messrs. Dick and Poyser.
Twenty-nine marks : F. H. Leonard.
Twenty-six marks : C. F. Russell.
Nineteen marks : E. H. Kettle.

INTER-SCHOOL CORRESPONDENCE TOURNEY.—FINAL ROUND.

Merchant Taylors' School has won one of its games and lost the other against Manchester Grammar School, and has won one against Trowbridge High School. The other is still in progress.

CALENDAR.

[*Items for the September Calendar must be received by August 17th,* 1900.]

August, 1900.

Wednesday,	1st.	—Scholarship Examinations begin at Bradfield College and St. Edward's School, Oxford.
		Second Holiday French Course begins at Paris.
		"Alliance Française" Holiday French Course begins at Caen.
Thursday,	2nd.	—University Extension Summer Meeting begins at Cambridge, when Mr. A. J. Balfour delivers the inaugural address.
		Secondary Education Conference begins at Paris.
Friday,	3rd.	—Holiday Courses in French Language and Literature begin at Elbeuf, Lisieux, and Tours.
Monday,	6th.	—Holiday Courses in German Language and Literature begin at Bonn and Jena; and Second Course at Marburg begins.
		Technical Education Conference begins at Paris.
Thursday,	9th.	—Educational Press Conference begins at Paris.
Monday,	13th.	—Second Holiday Course in French Language and Literature begins at Neuchatel.
Wednesday,	29th.	—Teaching of Drawing Conference begins at Paris.

The School World.

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The School World

A Monthly Magazine of Educational Work and Progress.

No. 21. SEPTEMBER, 1900. SIXPENCE.

SPELLING: PROCEDURE AND PROCESS.

By P. A. Barnett, M.A.

"HOW to teach spelling" seems to present a very simple problem, and the solution might be expected to be as plain as the terms in which the proposition is stated. This is only partly true; it would be wholly true if we were quite clear about the corresponding question—how spelling is learnt. The only hopeful way of looking at any difficulty involved in the practice of teaching is with an eye to what really happens, not to what *ought* to happen in a world constructed on our own specifications or in accordance with some philosopher's "method." How *do* people, particularly people who spell most easily, learn to spell?

If we are not methodisers *enragés*, we naturally first turn respectfully to tradition; what is the commonest plan? And we know enough of the modern analysing spirit, and the ill-instructed haste to philosophise smugly on the first results of analysis, to expect that a good deal more machinery has been erected than we need for the purpose. *Le raisonnement en bannit la raison.*

For we are perpetually forgetting that learning is an obscure process as subtle as the movements of forces in all other forms of growth. When cucumbers can be analysed into molecules of sunshine and contributory materials, and afterwards reconstituted by a deft combination, then, and then only, may we expect to be able to analyse mental achievement and its manifestations into their simplest constituents, and to turn out intellectual products as we do knives and forks. But as surely as the gardener can only plant and prune and water, and must leave the main business of nurture to the silent sun, the motionless soil, and the invisible air, so surely must the teacher leave the main business of intellectual achievement to the obscurity of natural forces; subordinating procedure, however intelligent, to process, however unintelligible. The whole practical philosophy of education lies in this consideration; not only are we unable to conquer Nature except by obeying her, but she "jibs" hopelessly at inopportune interference.

With the cautions here suggested, let us examine this question of spelling. It is pretty certain that most people who spell much for practical purposes get their spelling through reading. It is even true, in a sense, to say that spelling is to reading what character is to habit. Yet most of us who are middle-aged can recall—*infandum renovamus dolorem*—Mavor, and Butter so impishly misnamed. The spirit of those ancient classics still speaks to us from the press, for we are still presented with lists of words to be learnt "by heart," the phrase itself going to show that the fundamental notion dates back to the time when a man's brains were supposed to be planted not far off his midriff.

The people who spell best are generally found to be people who read copiously; yet Mr. Colvin had continually to correct the spelling of that voluminous reader, R. L. Stevenson. And, again, two people may read an equal amount of matter, yet Paul will spell well and Peter badly.

There are schools where lists of words are still given to children to be got by rote. The curious wayfarer may sometimes be seen to stand outside the walls of a primary school fascinated by the music of "c-a-t, *cat!* c-a-t, *cat!* c-a-t, *cat*," shrill and noisy, from fifty little throats; and the same practice, though on a smaller scale, testifies by the same liturgy to the same idolatry in schools of a different type. However, this following of Butter and Mavor has produced such apparently poor results that the moderns have elaborated "word-building" into a system on more or less rational lines, and given it a name. The difficulty emerges when we try to make a natural, that is, a rational, sequence. In these days we are all, very properly, for "connectedness" in education; and sometimes we get lists of words held together merely by a fable and a sound moral, such as *cat*, *catapult*, *catastrophe*, *cat-o'-nine-tails*; or *robber*, *lobster*, *gobble*, *doctor*, *sob*. Or there are lists which make no pretence to other principles of connexion than a mere surface similarity of sound and spelling, *cabin*, *rabbit*, *crab*, *black*, *blacksmith*, *cackle*, *attack*, and so forth. Or, occasionally, a teacher who is also a student will arrange his words on philological principles: *mid*, *middle*, *midst*, *amidst*, *midships*. Or the teacher determines the order of sounds on a scale of ascending physiological difficulty, and teaches these first by phonetic drill *without the printed symbols*, then introduces the symbols one by one, differentiating the main classes of symbols by some means—perhaps different colours—and instead of using the arbitrary traditional names, calling each letter merely by its sound as produced.

We can gain nothing by regarding the problems in controversy as simple. It can hardly be doubted that here as elsewhere no formula or plan is incontestably superior to every other in all circumstances. We may fairly expect to find that here as elsewhere outside the one great formula desiderating interest of some sort on the part of the pupil, no single prescription or system of procedure will be applicable universally.

Every one of the plans aforesaid has its weak—even its very weak—points. The first, the old plan of oral repetition, obviously useful within limits, dulls, depresses, and disgusts if it is unmitigated; repetition is often the stepmother of studies. But add something to it, compel the eye to co-operate by making it register the visual impression through reproduction in the form of transcription, and you at once *raise the mental operation* so many degrees above mechanicalness and vacuity. For it cannot too often be remembered (especially by the devisers of "methods") that excessive simplification of procedure tends to deprive intellectual effort of just that exercise of the co-ordinative powers which is at once the very food and gymnastic of the mind. *Therefore*, if simple transcription goes one better than oral repetition, then the transcription of something intelligible, of sentences (of judgments, as the logicians would call them), is a still more profitable form of procedure; for here—and this is the important point—eye and mind are concerned jointly with ear and tongue in one complicated operation. It is better to write *cat* and *jumps* than merely to drone c-a-t, *cat*, and j-u-m-p-s, *jumps*, because the visual impression of the first case is made deeper in the second by the effort of the eye to guide the hand in reproducing the sound discriminated by the ear. It is better to write *The cat jumps* than *cat* alone and *jumps* alone, because the framing of a judgment is a higher mental operation (being more complicated and conveying an intelligible meaning) than the mere mechanical announcement of a percept or concept. For like reasons, the concatenation of judgments in a paragraph is more profitable than the writing of disparate sentences. The best way to get to know a subject is to write (or try to write) a book about it; and lo! you have a common measure for the intellectual benefit accruing to the little lass who composes c-a-t into *cat* with stupendous effort for the approbation of her teacher, and to Mr. Herbert Spencer, who struggles for a lifetime to bring encyclopædic powers to the task of synthesising philosophy for his generation.

A great deal of our most earnest instruction is lamentably inept and futile because we are so far from being convinced that intellectual progress is absolutely dependent on intellectual effort. We keep our children accurately perfecting mechanical process till their operations become first automatic, and then mechanical, when we should be pushing them on, blundering, if need be, to intellectual effort on new ground.

Words alike in form may be connected, as we know, into sentences, and these sentences into intelligible paragraphs and little narratives, and these can be learnt by reading, repetition, and transcription in whatever proportion the teacher may think fit. Many reading-books are thus constructed. The weak point of such self-conscious compilations is that the period during which an intelligent child can be induced to interest himself in artificial narratives is much shorter than is ordinarily supposed. The whole apparatus—the reiterated sounds, the numbered sentences or paragraphs, the careful exclusion of mysterious difficulties—rouses first the victim's suspicions, and then his indifference. Try the experiment. Give a little child the most ill-written narrative, even that most perverse of pedagogic pedantries, an "object-lesson reader;" give also most ingeniously concocted orthographic rigmarole; you will find that honest appetite decides infallibly for the true thing. The child craves for information, not gymnastic; as soon as he suspects that you want to do him good, he will despise you and your works; the ingratitude of the little man will leave you mourning the common fate of missionaries.

The philological lesson is, of course, open to the serious objection that it is unlikely, from its character as a method of evidence, to quicken the interest of little children. Yet for a fifth or sixth form it is an excellent sort of science lesson, teaching other things besides spelling. You might indeed with children in a transition class, or in the first form of an ordinary school, profitably manipulate such a list as "mid, middle, midst, amidst, midships," and so forth; but "nip, knife, neap, nibble," would plunge teacher and class into despair. For although of all sciences perhaps philology is fittest for the school, it is not equally fit for all forms.

The difficulties still concentrate themselves on the earliest years of school life. It is the simple child that lightly draws its breath who makes hay of our subtle plans; it is the little foxes that spoil the vines, our pretty theories. How are we to make intelligent to little children a mechanical operation? Before there is anything but the faintest capacity for ratiocination, how are we to compel the help of reason?

It is a pity that our theorisers have done so little to draw attention to the vital differences between the teaching of classes and the teaching of individuals. It is certainly not often enough remembered that school and class are artificial institutions, the test being the more or less machinery which you are compelled to use in order to achieve a certain end. If you are teaching a small class or one pupil, you may snap your fingers at the machinery which for large numbers becomes indispensable; for your sorrows come not so much with single spies as with battalions. A moral or intellectual effort is much harder to initiate in a large body than in a small one; what teacher has not found that out? The larger your class is, the more unwieldy becomes your formula, the more mechanical and irrational your treatment of individuals. Class teaching must aim at the average child, and the average child is hard to discover. If you have a procedure valid in dealing with a large number of individuals simultaneously, your tricks and devices must needs appeal mostly to such impulses as you can set in motion mechanically. Ethics, politics, all life and time prove it. A Chinese runner the other day, it is said, covered a hundred miles in twenty-four hours; it is no uncommon thing for single pedestrians to make thirty in the same time for days in succession; a battalion that moves twenty and an army corps that moves ten have not done badly. The progress of a class is mostly measured by the pace of the weakest members, for the earnest class-teacher—often wrongly, to be sure—tends to spend his energies in preventing the lamest from stumbling, and he must therefore keep the most impetuous and intelligent on the curb. The single pupil can and should be put to do things for himself oftener than is possible or reasonable in the case of a class.

The "look-and-say" procedure in teaching reading (and therefore spelling) is probably, for the single pupil, shortest and best A dumb child can be made to read by it. But analytical apparatus multiplies as soon as you think it necessary to assure yourself that every step is taken by every member of your class; the obscure, rapid, and implicit operation must be open to inspection, slow, explicit. Machinery works by analysing and defining operations; what would under other circumstances be organic becomes mechanical.

In fact, the main question is the character of the analysis which we are to use as a preparation for the synthesis in which the children's task is accomplished. With the one or the very few it is enough to say, "That spells *cat*," and "c-a-t, *cat*," offers a quite inappreciable difficulty at a time of life and at an intellectual stage in which most things are arbitrary and nothing is truly rational. Besides, so much in English pronunciation and spelling is anomalous that the exceptions to any rule you may make, taken together with the rules that you formulate, behave like the draggling tails of a kite that will not fly. *Little children ought not, as a rule, to think about rules.* The more rapid the combined visual, lingual, and mental operation, the more readily they will get along to really profitable intellectual achievement.

When you deal with classes of some size, you may well feel that you cannot afford to run the risk of making leeway; but the teacher must settle with himself, first whether he is more or less capable of teaching with or without rules, and secondly, whether what he does now will expedite work further on.

It may be observed parenthetically that physical imitation is the easiest of all processes to set up in childhood, and therefore ought to be pressed into the service of teaching. It should also be remembered by way of caution. Here are a few flowers of mispronunciation heard incidentally by the writer from the lips of teachers of every grade during the past twelve months.

University:—

"They began to fin' out . . . Alexander waszh young at the time . . . Association as a process iszh sure . . . He claime' to succeed . . . The easies' manipulation of the syllogistic processh should . . . The firs' necessity waszh union . . . Even this did not make Alcibiadeszh 'rink . . ."

Secondary schools:—

"'Ow many shares cajoo buy? . . . Hiszh short tenure . . . Nexsh year . . . Now poin' to the one which *'ee* pointe' to . . . When he had finished, his eyes dimme' gradually . . . Putcher han's down . . ."

Primary schools:—

"Go cher place . . . How doeszh 'oor mother . . . Usezh 'oor Bunsen . . . He took stepsh showing . . . Aszh yet we have no' determine' the bes' way . . ."

Some one else's elaborate plan, devised by enthusiastic effort, tends to become lifeless if adopted entire by the uninspired teacher in all rigour. For instance, nothing could be more fascinating or, as far as it goes, phonetically accurate than Miss Dale's plan for teaching reading, and in the inventor's skilful hands it may well be believed that, used in class teaching, it is as rapid and effectual as it is interesting. But manipulated by us ordinary folk it might easily become a rather tedious parlour-game. Her analysis of simple sounds is excellent, and lays the foundation for subsequent phonetic drill of the greatest value in the learning of languages; but, more than a single doubt may be permitted as to the general utility of the accompanying machinery. Still, the analysis by itself is a thoroughly sound beginning of the second stage of learning—the first being passed at the mother's or nurse's knee—not reading only, but spelling also; it is the foundation of the philology which, as has been suggested already, is the proper school science. But this second stage should certainly be a short one. It is most important to give the little child an introduction to *miscellaneous* reading very early, and above all things—a point not neglected by Miss Dale—to teach him very early to deal with long words as well as short words. No such harm has been done by any error of mistaken analysis as by the conscientious comminution of reading-books into books of one syllable, books of two syllables, books of three syllables, and so forth.

For the English child *ought* to learn very soon that spelling is often anomalous, and he should see the anomalous words and be encouraged by means of transcription and a very little reiteration to "commit" a few of them to memory—not all that occur, mind, but a few; just enough to set up the beginnings of a habit of noticing. Most of the anomalous words will be learnt, if at all, by copious reading. Of course there will still be differences between individual children. Some will receive combined impressions more faultlessly than others, and any plan that professes to do equally well for all equally intelligent people may be put aside as too pretentious for use.

It will be seen that the use of the plan here suggested for class teaching may deprive us of the traditional names for letters, *ay-bee-cee*, and the like. Not necessarily; for there is little loss even if the teacher has to tell the child that the letter *c* sometimes "says" s . . s . . s . . . and sometimes k . . k . . k . . .; for it does, and there is no use in concealing the grim fact.

But the necessity is certainly less in the case of the single pupil or very small class; and the traditional names, frequently as their function belies their profession, give a sort of personality—not scientific, like Miss Dale's *brothers, sisters, important brothers*, and the rest—but even more interesting in a romantic sense, just because apparently arbitrary. But to large classes at a very early stage of corporate instruction the frequent use of the phonic plan is a real economiser of labour.

The problem would offer no difficulty if all words were spelt phonetically. Miss Dale's or any other similar plan would then settle our troubles in six months' lessons. This is not the place to discuss the new questions hence arising; but we should remember that the phoneticising of our spelling would certainly be a long step towards the destruction or effacement of ethnological landmarks which all can be taught to interpret; a long step towards the intellectual and moral vulgarity that comes of a weakened historical sense.

Harm is being done to-day by the pedantry which often excludes reading from the kindergarten. No sufficient reason has ever been given for this piece of obscurantism, even by Dr. Oppenheim. The discrimination of letters and their coarse reproduction do not overtax a little child's eyes; an old peasant whose eyes have scanned chiefly the furrow and the drill all their working days does not see better than an equally old parson, or lawyer, or schoolmaster, who may have dwelt on little else in life but letters. Why should we shut the door of a whole new world in the child's face when access is easiest? It may be taken, one would think, for granted that he will spell best if he cons letters and words when the calls for effort are fewest, and particularly if he is allowed to read largely, and to read real narrative as soon as he is capable of running his eye along a consecutive sentence. Reading and the sequential mental ferment is the best way of cultivating the first elements of abstraction so necessary to profitable mental life. Why do we try to produce a fussy vacuity? Man does not "learn by doing" alone; thinking, too, is somewhat.

In the main, then, the conclusions which seem to be reached by the experience here recorded and reckoned up are, shortly, these:—Individual pupils or very small classes seem to learn spelling readily and effectually by reading. Little harm comes of the use of the traditional letter names, especially in dealing with single pupils. Transcription should be called in aid from the beginning; first of words, and afterwards, as soon as possible, of sentences and paragraphs. With this should go reading as copious, of matter as miscellaneous, as can be compassed. For classes of some size, we seem to do best by combining the phonic and philological plans, associating words first by community of sound, and, later, community of history, not boggling over the number of syllables, nor using artificial words in any shape after the very brief first. The systematic study of words is not only the best way of learning spelling, but also incomparably the best school introduction to science, both as a method of classification and as a method of evidence. The less the artificial staging we build up round our work, the sooner our edifice will stand by itself, *semper, ubique, et in omnibus rebus.*

OBSERVATIONAL ASTRONOMY.

A SERIES OF NOTES UPON THE POSITIONS AND APPARENT MOTIONS OF CELESTIAL BODIES.

By R. A. GREGORY, F.R.A.S.
Professor of Astronomy, Queen's College, London.

II.

THE chief constellations, or groups of stars, always visible in England on a fine night, when looking towards the northern sky, were described in the preceding article; they are the Great Bear, of which the Plough is the most conspicuous characteristic, the Little Bear (with the Pole-Star), Cassiopeia, Draco and Cepheus. Sometimes the stars in these groups are high above the northern horizon, and sometimes they are low down, but they are never invisible unless obscured by clouds. In addition to these *circumpolar* constellations, there are others which are only seen at certain seasons.

Constellations visible in England when facing South.—In the middle of each month, about 10 p.m., the following are the chief conspicuous constellations seen when facing south. The same constellations are south about midnight in the preceding month, and 8 p.m. in the following month.

Month.	Constellations.
January... ...	Gemini, Orion, Auriga, Canis Major.
February ..	Cancer, Canis Minor.
March	Leo, Hydra.
April	Virgo, Canes Venatici.
May	Libra, Boötes.
June	Scorpio, Corona, Hercules, Ophiuchus.
July	Sagittarius, Lyra.
August	Capricornus, Aquila, Cygnus.
September ...	Aquarius, Pegasus, Piscis-Australis.
October ...	Pisces, Cetus.
November ...	Aries, Perseus, Cetus.
December ...	Taurus, Auriga, Eridanus.

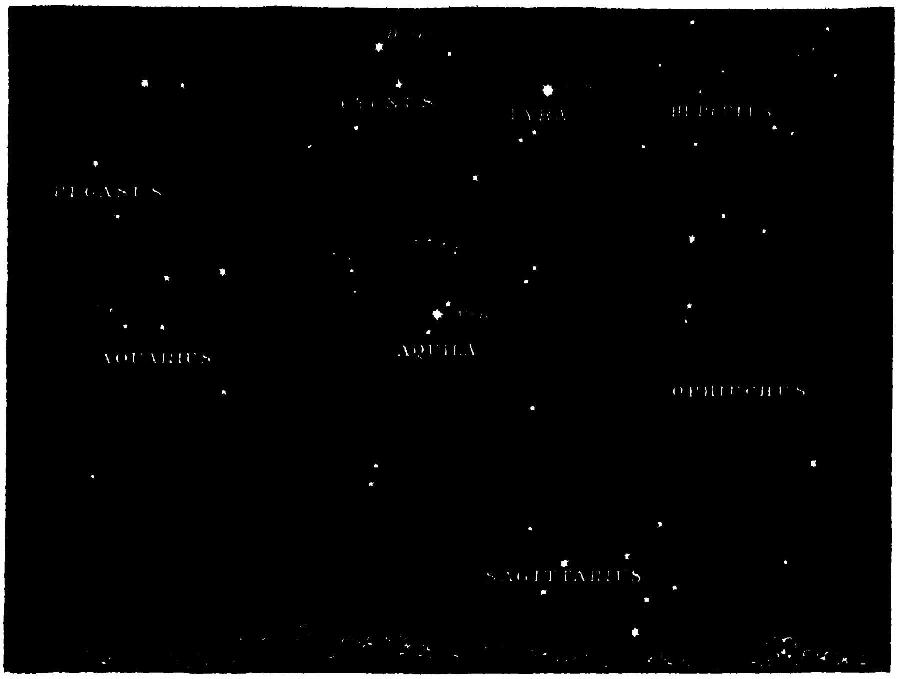

Fig. 1.—Chief Constellations visible when facing south in September.

Face of the Sky in September.—For the present it will be sufficient to guide the observer to the brightest stars visible at this season of the year. Look towards the well-known Plough about ten o'clock. In the mind's eye continue the curve of the handle towards the western horizon, and a bright yellowish star—Arcturus—will be found. Low down in the north-east, another bright star—Capella—will be seen.

Some fine constellations can be seen when facing south at ten o'clock. High up in the sky a brilliant bluish-coloured star called Vega attracts the attention of the most casual observer. It forms a large triangle with the Pole-Star and Arcturus. Two fairly bright stars will be seen forming a small obtuse triangle with Vega, and the three represent the chief objects in the constellation Lyra.

Cygnus, the Swan, has the form of a cross, and lies close to Lyra. The brightest star in this constellation marks the top of the cross, and makes a right-angled triangle with the Pole-Star and Vega, itself being situated in the right angle.

The bright star Altair, in the constellation Aquila, can be seen on the meridian about ten o'clock in the beginning of September. A line from the Pole-Star, through the cross of Cygnus, if continued for about the same distance towards the south, leads to Altair—the middle of the three stars in a line—all of which belong to the constellation of the Eagle.

APPARENT DIURNAL MOTIONS OF THE STARS.

Apparent Diurnal Movements of Circumpolar Stars.—Though the configurations of stars observed in the sky remain practically the same from year to year, the whole of the stars appear to be carried round the heavens once in about twenty-four hours. So far as appearances go, the stars may be considered as electric lamps fixed in a vast dome which turns once a day upon an axis passing through a point near the Pole-Star, the direction of motion to an observer looking towards the north being opposite to that in which the hands of a clock move. If the sun did not obliterate the light of the stars, we should be able to trace this diurnal movement completely round the Pole. As it is, the observation of the movement is limited to the hours of night.

These apparent diurnal movements can be used as a celestial time-keeper. The position of the Plough group at 9 p.m. in September is shown in Fig. 2. Imagine a line to pass through the Pointers and the Pole. This line may be regarded as the hour-hand of a celestial clock, and the posi-

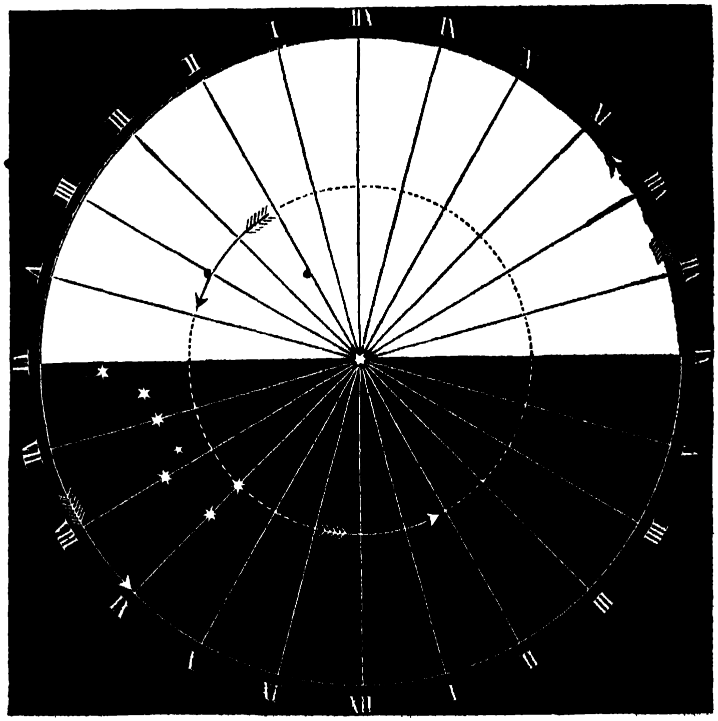

Fig. 2.—Positions of the Plough at different hours in September.

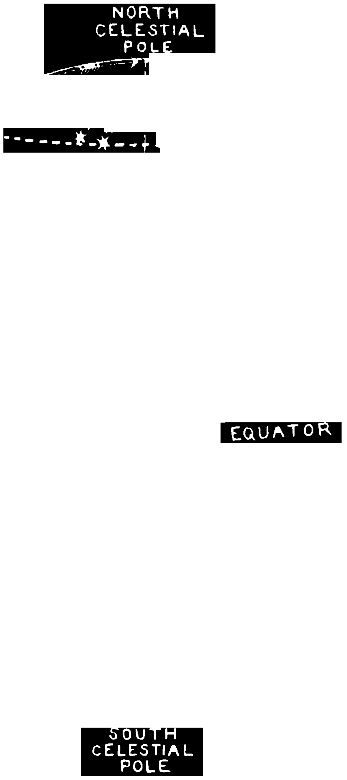

FIG. 3.—The Earth in relation to the Celestial Sphere.

tion it occupies at each hour at the time of year selected is shown upon the illustration. The diagram here given is for September, but a similar dial can be constructed for any month. If the Pointers are observed upon any night in the year, the position of the line through them and the Pole changes at the rate of about $\frac{1}{24}$th of a circle per hour, that is 15° per hour, in precisely the same way as is represented in the illustration.

Spheres of Observations.—Regarding the stars as fixed points on a celestial sphere, and the earth as a globe rotating within the sphere, it is easy to understand and explain all the appearances presented by the heavens. The following points should be borne in mind:—

(1) Only one half of the celestial sphere can be seen by a single observer at any instant.

(2) The celestial hemisphere visible has for its zenith the point directly above the head of the observer, and the horizon passes through the centre of the earth 90° from it.

(3) On account of the earth's rotation, each star appears to describe a diurnal circle around a celestial Pole, and the radius of the circle depends upon the distance of the star from the Pole.

(4) The centre of the diurnal circle has an altitude equal to the latitude of the place of observation.

Face the north on any fine night and direct one leg of a pair of compasses, or of two hinged rods, to the Pole-Star. Point the other leg to a star in the Plough or Cassiopeia. Keeping the leg directed towards the Pole, describe a circle with the other. This circle indicates the apparent diurnal path followed by the star under observation.

Open the compass or hinged rods until one leg points to the Pole-Star and the other to the horizon, with the plane of the legs vertical. A circle described with this radius embraces all the stars visible to an observer on a clear night from the place of observation. Such stars are termed "circumpolar" stars. Measure the angle between the legs by means of a protractor or divided circle; or better, measure the altitude of the Pole Star with the arrangement described last month.

Diurnal Circles of Circumpolar Stars.—From these observations it will be seen that all stars at an angular distance from the Pole not greater than the latitude of the place of observation are always visible on a fine night, that is, they are circumpolar. Hence, to determine the apparent circle described by any star at any place, all that it is necessary to know is the latitude of the place and the angular distance of the star from a celestial Pole (or its distance from the celestial equator, for, as in the case of terrestrial latitude, angular distance from Pole = 90° minus angle from equator). A few examples will show how to apply this principle.

The last star in the handle of the Plough is 50° from the celestial equator. About what latitude is it just not a circumpolar star?

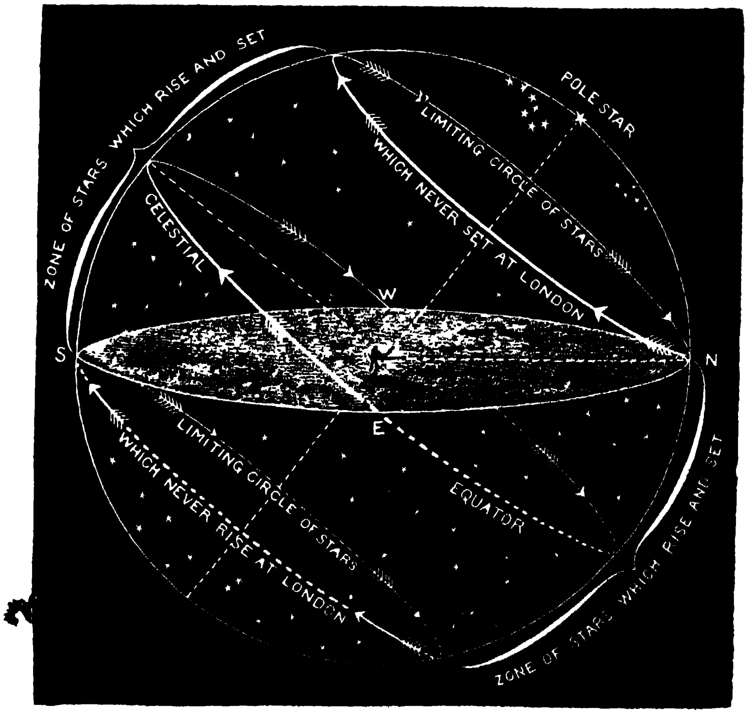
ZONE OF STARS WHICH RISE AND SET
POLE STAR
LIMITING CIRCLE OF STARS WHICH NEVER SET AT LONDON
CELESTIAL
W
S
N
E
LIMITING CIRCLE OF STARS WHICH NEVER RISE AT LONDON
EQUATOR
ZONE OF STARS WHICH RISE AND SET

FIG. 4.—Different Diurnal Paths of Stars observed in the Latitude of London.

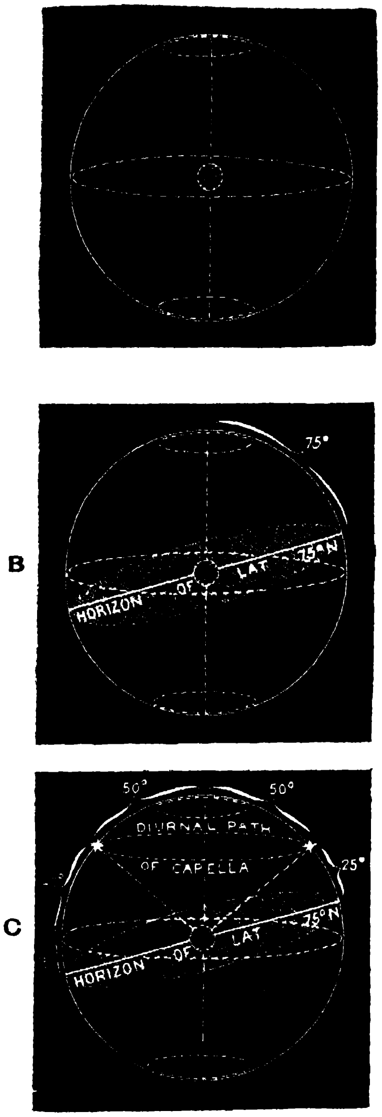

Fig. 5.—Stages in the construction of a Diagram to represent the apparent movement of Capella in Lat. 75°N.

As the star is 50° from the Equator, it is 40° from the Pole; so that its diurnal circle has a radius of 40°. The horizon of a place in latitude 40°N. touches the bottom of this circle, therefore the complete diurnal course of the star will be observable in latitude 40°N. In lower latitudes, however, say 30°N., the Pole is only 30° or less above the horizon; hence the complete course of a star 40° from the Pole cannot be observed.

The brightest star in the constellation of Cassiopeia is about 34° from the Pole. What are the greatest and least altitudes which the star attains in latitude 55° N.?

Altitude of Pole
= Latitude = 55°N.
Radius of Star's
Diurnal Circle = 34°.
Least Altitude
= 55°—34° = 21°.
Greatest Altitude
= 55°+34° = 89°.

The bright star Capella is about 44° from the North Celestial Pole. In what latitude does it become a circumpolar star?

Radius of Capella's Diurnal Circle with Pole as Centre = 44°.
But Altitude of Pole = Latitude.
Therefore in any north latitude greater than 44° the complete diurnal circle of Capella will be observable.

Solution of Questions referring to Positions and Diurnal Movements of Stars.—Though the apparent diurnal motions of the stars in different latitudes may appear complicated to students who have not had the time to observe or consider them, they are really extremely simple, and every question as to the apparent position or motion of any star in any latitude can be easily answered by bearing in mind one or two facts. The best way to deal with all such questions is by means of diagrams. For any case, first construct a diagram such as Fig. 5, showing the earth in relation to the celestial sphere, and some apparent diurnal circles. Next draw a line through the centre of the earth and inclined to the axis at an angle equal to the latitude of the selected place of observation. This represents the horizon of the observer, and a perpendicular upon it at the position of the observer points to the zenith. Thirdly, if the position of a star is given, insert the star at its proper angular distance from the Pole and draw a diurnal circle through it parallel to the other diurnal circles. The diagram thus constructed exhibits graphically all the phenomena due to position and diurnal motion observable from the place selected. It is instructive to apply this method to an actual case:—

An arctic explorer spends Christmas in 75° north latitude. For twenty-four hours he watches the bright "fixed star" Capella, which in lat. 50° N. never seems to set, though it sometimes appears close to the horizon. Describe the movements that the star seems to make. At about what altitude will he see the star (1) when it is nearest to the horizon, and (2) when it is highest above the horizon?

Draw the earth and one or two apparent diurnal circles on the celestial sphere (Fig. 5-A).

Insert the horizon of an observer in latitude 75°N., by drawing a line at an angle of 75° to the earth's axis (Fig. 5-B).

As the star Capella is just circumpolar to an observer in latitude 50°N., its angular distance from the North Celestial Pole must be 50° for latitude = altitude of Pole.

Draw, therefore, the diurnal circle of a star 50° from N. Pole. (Fig. 5-C.) It will then be seen that the altitude of Capella when nearest the horizon = 75° – 50° = 25°. Altitude when highest above the horizon = 40° + 15° = 55°.

Models to Illustrate Apparent Motions.—All the apparent motions of celestial bodies can be explained by the use of a celestial globe, but frequent use of such a globe is necessary before a student becomes familiar with it. A simpler instrument (Fig. 6) has been devised, by means of which the apparent movements can be illustrated.[1]

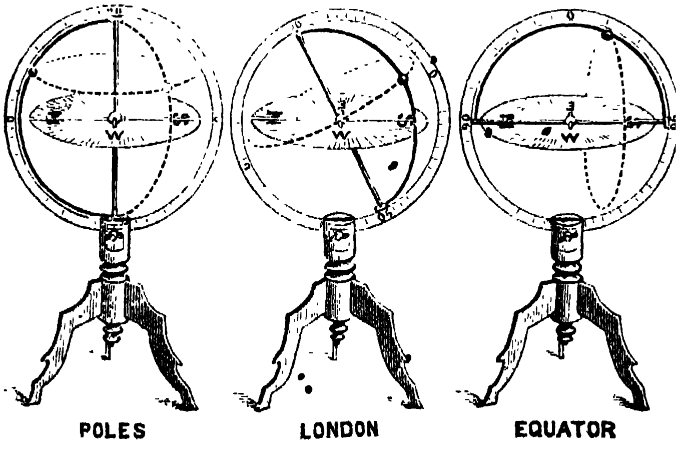

Fig. 6.—The Celestosphere arranged to show the apparent Diurnal movements at the Poles, in the latitude of London, and at the Equator.

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[1] The instrument is termed "The Celestosphere," and is sold by Messrs. Chapman and Hall, 11, Henrietta Street, Covent Garden, W.C.

The instrument consists of a movable horizon, and an axis which can be set at any inclination to it. A small ball sliding upon a wire semi-circle is used to represent a celestial object. To use the instrument, the horizon is set horizontally, and the axis of the divided brass meridian is elevated until the angle it makes with the horizon is equal to the latitude of the selected place of observation. The small ball is then pushed along the wire until its angular distance from a celestial pole is the same as that of the object the apparent motion of which is required to be illustrated. By rotating the wire semicirle, the ball is thus made to describe a circle round the celestial pole, and the circle represents the apparent diurnal motion of the object with respect to the horizon of an observer in the latitude selected. The apparent diurnal motions of an object about 60° from the north celestial Pole, or 30° from the equator, as observed at the Poles, in the latitude of London, and at the earth's equator, are represented in Fig. 6.

Exercises.

(1) Make a sketch of the relative positions of the brightest stars in the constellations Cygnus, Lyra, and Aquila.

(2) Sketch the relative positions of Arcturus and the stars in the Plough.

(3) Make a sketch of the Plough and the Pole-Star. Connect the Pointers with the Pole-Star by means of a broken line. Upon the same drawing, sketch the position of the Plough after an interval of six hours.

(4) The altitude of the Pole-Star is approximately equal to the latitude of the place of observation. Construct a diagram of the celestial sphere and the earth within it, to explain this relation.

(5) In what positions is the Pole Star seen in Ceylon (lat. 7½° N.), Edinburgh (lat. 56° N.), and Spitsbergen (78° N.)?

(6) The Pole-Star is 51½° above the north point of the horizon of London, and 90° from the celestial equator. What is the altitude of the celestial equator above the south point of the horizon? (Ans., 38½°.)

(7) At what points on the horizon does a star on the celestial equator rise and set?

(8) In what position on the earth would it be possible for an observer to see the complete north celestial hemisphere?

(9) Explain, by diagrams, why, to an observer in England, some stars are always visible on a fine night, some are never seen, and some rise and set.

(10) Do the stars which rise due east pass near the zenith at London? If not, how far are they from the zenith when they cross the meridian? (Ans., 51½°.)

(11) The bright star, Vega, is about 40° north of the celestial equator. An Arctic explorer observed it when due north below the Pole-Star, and found its altitude to be 25°. In what latitude was this observation made? (Ans., 75°.)

(12) Observing in London (lat. 51½° N.), a star was seen below the Pole-Star at an altitude of 21½°. What is the angular distance of this star from the celestial equator? (Ans., 60°.)

(13) An eminent writer describes how a man who had fallen down a pit was comforted by seeing a star which shone upon him throughout the night. Would it be possible for this to happen?

DIFFICULTIES OF A DAY-SCHOOL HEADMASTER.

By E. Sharwood Smith, M.A.

Headmaster of the Grammar School, Whitchurch, Salop.

Though it is not my intention in this paper to discuss the relative merits of day and boarding-schools, it is impossible, in dealing with various difficulties that beset the day-school headmaster, to avoid certain comparisons.

I suppose that, if one takes every factor into consideration, the day-school education in its most perfect form approaches nearer to the ideal. Certainly it is best for the individual, though possibly not for the race. The πολυτραπελός, the many-sided man, is usually the product of a day-school. Day boys tend to variability, boarders are more or less of one type, usually a very fine type, it is true, but still somewhat limited and narrow in their notions. However, I have come not to bury Cæsar, but to praise him, and to try and show how a day school may copy many of the best features of a public school, and yet not destroy the individuality of its members.

For I suppose most will grant that what we vaguely style "the public-school spirit" exists, in its genuine form, only in the larger boarding-schools. Very many will assert that, *ipso facto*, it cannot be found in a day school.

This is much too sweeping a statement, and I fancy that an old scholar of one of the London schools or the great Edwardian foundation at Birmingham, would, like the Duke in Conan Doyle's "Story of Waterloo," have something to say on that matter.

But a few exceptions only prove the rule, and in the main it holds good. The reasons are obvious. The headmaster of a large boarding-school starts with the enormous advantage that he is practically free during the term from any outside interference. He is for the time being an autocrat, and if he is a first-rate man, and is loyally supported by his staff, he can practically mould his boys as he will, and in fulness of time breathe into them his own spirit and his own ideas.

For whence, after all, comes that fine spirit, the despair of foreign educationists, popularly supposed to be the exclusive property of the sacred few?

Not entirely from great traditions, as some would have, for many of the most successful schools of the day, as Clifton, for example, or Wellington, are quite recent creations. Not from splendid buildings or spacious playing fields; though these, no doubt, engender a pride in the school which makes largely for the pure ideal.

Not from success in school games, certainly not, though a splendid patriotism almost inevitably brings that in its train. Not, fortunately, from the wealth of the pupils, or public spirit rapidly degenerates into snobbishness and "side." Lastly, I suppose all will admit that it emphatically does not come from intellectual successes.

All these, with one exception, are helps, and I, for one, should be the last to deny their usefulness, but they may easily exist in a school which is morally and spiritually corrupt.

It is evident that the "tone" of a school depends principally on the personality of the rulers, and the less a ruler and his staff are hampered and thwarted by continual interference, the more easily will they achieve their work. That this is the case is abundantly proved by the instances of Rugby under Arnold and Uppingham under Thring, and the obvious recipe seems to be, "Take a good headmaster and entrust him with plenary power." Let him and his work be shielded and protected by what (though not exactly in this sense) Thring is so fond of calling "The almighty wall."

But now look on the other side. Take the case of an ordinary provincial grammar-school, and there are hundreds of such in England to-day, as "Whitaker" will show us. Is it possible for such schools to do, in their degree, the same fine work that is accomplished by the big boarding-schools?

A glance at the difficulties that confront one is not reassuring. Such schools do not draw from a wealthy and well-educated class. Their parents are probably not imbued with the public-school spirit; they have no immemorial traditions, no magnificent buildings put up regardless of cost, no wide playing-fields, no strong or assured position which will enable the authorities to pursue their own ideals, careless of opposition. Above all, with them "work" must, and must rightly, come first. Of course, I do not mean to imply that work is not done in the greater schools, but it is evident that there is a large number of boys there who have no need to work, but have great need of being turned into "men," with perhaps very ordinary intellectual equipment, but with (what is better) a noble and fearless character:

> Quid debeas, o Roma, Neronibus,
> Testis Metaurum flumen et Hasdrubal
> Devictus.

South Africa is full of such, thank Heaven, just now, and one feels almost inclined to substitute Tugela for Metaurus, and Botha for Hasdrubal.

Let us take the case of a headmaster who has just been appointed to the day grammar-school of Little Pedlington-in-the-wilderness, and comes full of the fine traditions of his own school, determined to breathe some of that spirit into his new pupils.

With the work he will probably have little or no difficulty. The more you descend in the social stratum to a certain point, the less difficulty you have in enforcing regular work. The reason is obvious. All the boys practically will have to work for their living, and with that deep and reverential worship of examinations which is so marked a feature in the British parent, home influence in the majority of cases will make strongly for success in that line.

But it is when he comes to games that the new and aspiring headmaster will find his path quickly bestrewn with thorns. The idea of "compulsory games," even if he desires them, he may dismiss for a time at once. For let him but suggest such a system, and straightway on his devoted head bursts a storm of invective and misrepresentation as will infallibly strike him to the earth if he does not bow to it. "Why should my son have to play games on *his* half-holiday?" "Is he to have no time to himself?" "Am I, his parent, never to be allowed his services?"

All the sacred, inviolable rights of the *patria potestas* are outraged. Boy after boy is withdrawn. Down, down sink the numbers. Longer and longer grow the faces of the Governors, and the rest is—silence—or worse. No—competition is too strong, and there is always the technical school.

Incalculable evil has been done to real education by that insatiable desire for something new which has prompted local authorities rather to erect brand-new institutions of universal instruction than to help the old grammar-school. Let us hope that for this the new Board will find a speedy remedy.

Compulsory games (in the strictest sense) cannot exist, and I for one would not have them if they could. Besides crushing individuality out of a boy, and likely to render mute and inglorious for ever the future Miltons of the age, they soon degenerate into mere routine, and too apt to make a boy believe that there is nothing so important in life as athletics, and no literature worth reading beyond the "latest editions."

But if we cannot have compulsory games, we certainly should have *organised* games. There is no need for me to dwell on the good they do. We appreciate them at almost too high a value already.

The main difficulty is to stop that hateful loafing round the town, and yet not discourage the literary or scientific spirit that exists in many boys.

Still the matter is not impossible in a school where one knows, or should know, the character of every boy. A plan that has been found to work well is to insist that every boy is liable to be "commandeered" for games unless *at the beginning of the term* he brings a note from a parent requesting exemption. This puts some sort of a check on the easy, good-natured parent who is ready to listen to a loafer's excuses.

But it is one thing to choose boys, it is another to get them to turn up when chosen. And I am afraid here that at first, at any rate, they must have the fear of punishment before their eyes until you have educated your public opinion. But Justice must often turn a blind eye to the delinquents, or where are our Darwins and Spencers to come from? A whisper to a school captain, a hint to a prefect, will often save the situation. Much depends on the arrangement of games so as to foster and "fix" a spirit of keenness. A large number of boys evidently cannot play in matches, and eternal "pick-ups" soon grow stale. If, however, you take a leaf out of the public schoolmaster's book and establish a system of arbitrary houses or divisions, you will engender any amount of rivalry. The "Blues" and the "Reds," though they have no *raison d'être* for their existence except the will of the authorities, will fight as keenly for the little pot as Mitchells and Durnfords.

Even this semi-compulsory system, however, can only be introduced by degrees and almost insensibly. There is deep-rooted in many parental minds a strong distrust and suspicion of the schoolmaster and all his ways, a lurking idea that he is somehow being defrauded. And there is something to be said from the parents' point of view. Many feel it a genuine grief to be deprived of their sons' companionship on a Saturday afternoon—unfortunately there are also many who feel it an intolerable hardship to lose their boys' services in the field or the workshop. This in an agricultural community is a very real difficulty, and after all it is not surprising. We do well occasionally to put ourselves in parents' places.

However, for one case where it is a genuine loss to a parent, in nine, I believe, the boys' services are quite unnecessary, and is due to an idea that the boy is being trained to be lazy if his idle hands are not fully employed. Much the same remarks apply to school institutions generally. The more there are of them within a reasonable limit the better. Every boy has some hobby. If you can only discover it, and give him some out-of-school interest, you will get the proper spirit in him, without the martyrdom of cricket and football.

But, alas! nowadays, with the grim competition that we have most of us to face, very little time is left to a boy for out-of-school pursuits, and I very much doubt whether our elaborate time-tables and our highly-organised games are not doing a large amount of harm to a boy's power of initiative and character generally. When I was in the sixth at my old school we were turned loose for an hour at least a day into a fine library with a nominal "unseen" to prepare. Of course we did no work, but the amount of literature we devoured was prodigious. I see the Headmaster of Shrewsbury echoed the other day the common complaint about a boy's reading. From my own experience, I believe that it is not only the trashy "bits" and "scraps" that are killing real literature among schoolboys, but also the painful mapping-out of every portion of his day. Even on a whole school-day, I remember, we often stole away for the last twenty minutes for a game of football in the playground *under the headmaster's study windows*. I used to think him slack then, now I know how wise he was. And we used to beat most schools for scholarships. But what day-school headmaster dare allow such a thing now? Sometimes one sighs for the old times still.

Every headmaster knows the value of prefects, and in a day-school they can be made of immense service if judiciously chosen. I appointed a prefect the other day, and his father immediately objected to his doing the work of a junior master. But this is by the way. Such matters as a boy's dress, his behaviour in the streets, and his tone generally, are best left to them It is the day of small things now, and there are headmasters who worry about the state of a boy's collar and the condition of his trousers till they break the boy's spirit (for it is not his fault usually) and cause continual friction at home. One can never forget that a day school is under perpetual surveillance; our work is practically done under the microscope, and little mistakes, which are forgotten by the end of a term in a boarding-school, are faithfully carried (or rather miscarried) home every day.

Discover a periodical famous only for its vulgarity in a boy's pocket, denounce it in no measured terms as destructive to character and morals, and receive a letter the next day from a parent avowing it as his favourite reading and troubling you to mind your own business! Punish a boy for smoking in the street, and find the father knowingly provides the cigarettes. After all, the best maxim is that given me by a famous headmaster of his day, "Take care of the boys, and the parents will take care of themselves," or, put in a slightly different and better form, "Educate the boys, and the boys will educate their parents." One has to yield again and again when one's instinct accuses one of cowardice and treason to ideals, but a little tact and a conciliatory spirit go a long way. By precept, by example, by patience and perseverance, here a little and there a little (and, above all, *not* by continual preaching), the flame may be kindled in the boy, and when once it is fairly alight parental opposition is of little avail. After all, all parents are not insensible to what is best for their boys—a consideration which perhaps we are some of us too prone to overlook. If only they would trust schoolmasters more and realise that a man trained and experienced in the profession is often capable of appreciating a boy's limitations and abilities better even than the parent himself! Far be it from me to suggest that a parent's wishes should be systematically neglected, but with that heart-breaking indifference to good education which is, alas! so characteristic of the English middle-class, it is too common a thing to find a father ruining a boy's prospects by his injudicious conduct.

Hoc opus, hic labor est—how to deal with the injudicious parent!

The Day-School Boy.—Taken as a whole, the sympathy and interest of the parent is the day-school master's strongest support; without it his work would generally be in vain. And even in cases where the parents are weak or indifferent a boy may learn an amount of independence and self-reliance from the mere absence of external aid, which he often fails to learn at a boarding school, or even at the university. Another advantage, particularly in the highest forms of a school, which follows from the fact that a boy lives at home, is that his time out of school is not so entirely taken up with matters of school and house management as is often the case with the Sixth-Form boy in a boarding house.—C. Cookson, "Essays on Secondary Education" (Clarendon Press).

SHORT CUTS IN MATHEMATICS.

By FRANK CASTLE, M.I.M.E.

IT has been felt for some time that much of the arithmetical work done in schools is of too abstract a nature. Attempts are being made to introduce reality into the mathematical class-room, and to show pupils how principles and method may be applied to the problems of every-day life. In connection with this subject, a brief description of some mechanical devices used by practical men to perform calculations and solve problems may be of interest to teachers. The ability to work a sum accurately is certainly desirable; but, after all, accuracy is only one faculty requiring development, and it is just as important for a pupil to know how to arrive at a correct result as it is to actually obtain the result. It is possible to get machines to make calculations, but no artificial contrivance can be made to think.

Amongst the many labour-saving contrivances used by practical men only a few can be referred to here. Perhaps the most common is that of carefully compiled tables of numbers, by means of which, knowing the weight or price of a single article, the weight or price of any number can at once be ascertained. Such tables constitute the so-called "ready reckoners."

Also in special cases, where a large amount of multiplication, division, &c., has to be performed, one or other of the many forms of calculating machines may be used. These, however, are far too expensive for general use. Hence, when it is necessary for any practical purpose to multiply or divide one set of numbers by another, contracted methods of multiplication and division may be adopted; or, in some cases, *duodecimals* may be used with advantage. But in all cases probably the best and most trustworthy method of performing the different arithmetical processes is by means of logarithms.

Engineers, navigators and others have long appreciated the value of logarithms, and during the past few years the use of logarithms in the science laboratories of secondary and technical schools has become general. In the opinion of many mathematicians, there is no reason why a boy should not learn how to use tables of logarithms long before he understands how the tables are calculated. Whether this is agreed to or not, the fact remains that the vast majority of men who do use logarithms have not the faintest idea as to the mathematical principles underlying their computation.

It is, however, not proposed in this article to deal with logarithms or any other of the labour-saving devices already mentioned. The object is (1) to direct attention to the slide rule and its use in many tedious arithmetical operations; (2) to describe a simple planimeter of interest to teachers of physics and mensuration, and (3) to give one or two instances of the use of graphic methods of representing varying quantities.

THE SLIDE RULE.—Students familiar with logarithms know that by their use the multiplication of two or more numbers is effected by adding the logarithms of the numbers, and their division by the subtraction of the logarithms of the numbers. In other words, by the use of logarithms multiplication is replaced by addition, and division by subtraction. Remembering this, it is easy to understand that if a scale is constructed in which unequal divisions corresponding to the logarithms of numbers are employed, then, upon such a scale, multiplication will correspond to addition and division to subtraction.

It is an easy matter to add together two linear dimensions by means of an ordinary scale or rule. Thus, to add 2 and 3 units together. Assume the scale *B* (Fig. 1.) to slide along the edge of the scale *A*; then the addition of the numbers 2 and 3 is made when the 2 on *B* is coincident with 0 on *A*. The addition of the two numbers is found to be 5 opposite the number 3 on the scale *A*.

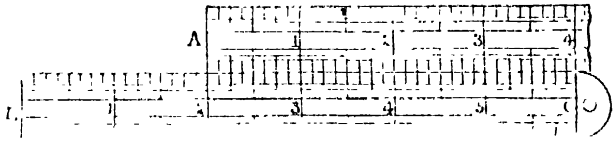

FIG. 1.—Simple addition by means of two scales.

If, however, the scales on *A* and *B* are not divided in the proportion of the numbers, but of the logarithms of the numbers, then, with this system of graphic logarithms, by sliding one scale along the other in the manner described, addition is performed, but, as the scales are logarithmic, the result corresponds to the product of the numbers added. Similarly, the number corresponding to the difference is the quotient of a division.

This principle is utilised in all slide rules, although the arrangement of the lines depends upon the purpose to which the rule is to be applied. The modified form of the slide rule, or Gravêt rule, is one of the most accurate instruments of the kind that can be obtained. The instrument, with the exception of the cursor *E*, is usually made of boxwood or mahogany. In Fig. 2., which shows a Gravêt rule, it will be seen that the distances between the divisions are by no means equal. The divisions and sub-divisions are not equi-distant as

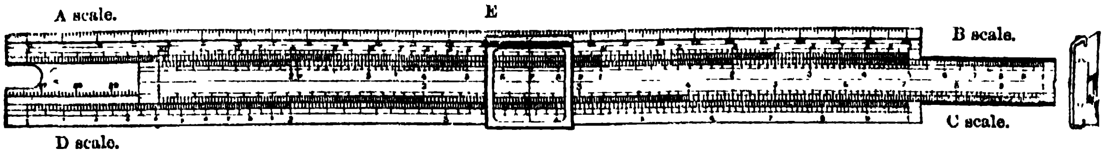

FIG. 2.—Slide rule.

in an ordinary scale, but are logarithms of the numbers, and are set off from the left or commencing unit.

Assuming any length, such as from 1 to *E*, scale *A*, to be 10 inches long and to be divided into ·10 parts, then the distance from 1 of any intermediate number from 1 to 10 is made proportional to its logarithm. For instance, to find the position of the 2nd division, since log ·2 = ·301, ·301 parts, or 3·01 inches from 1, would indicate its position. In like manner the 3rd division would be ·477 parts, or 4·7 inches; the 4th, ·602 parts, or 6·02 inches; the 5th, 6·99 inches, &c. Denoting the distance of any division from point 1 by *x*, if *l* denote the length of the scale from 1 to *E*, and *L* the logarithm of the number indicating the division required, then

$$x = l \, . \, L.$$

When the upper scale *A* is set out, the scales *B* and *C* on the slide and the scale *D* may be similarly marked from it. It is an excellent exercise to construct a slide rule in paper or thin cardboard, determining the length of the divisions in this way.

Details as to the methods of setting the slide for the operations of multiplication, division, involution and evolution, and other calculations, will be found in several manuals upon this useful instrument, and in my "Practical Mathematics," and "Workshop Mathematics" (Part II). My present purpose is to point out the simple principles of construction of the slide rule, and to advise all who have frequently to make numerous calculations to invest in one. Once a person has become familiar with it, the instrument becomes a veritable *vade mecum.*

A SIMPLE HATCHET PLANIMETER.—After a pupil has mastered the straightforward rules for determining the areas of regular plane figures, why should not the method be taught of finding the areas of irregular figures by instruments in common use with engineers? It is not necessary to have the comparatively expensive Amsler planimeter, for very good results can be obtained with the easily constructed hatchet planimeter.

A hatchet planimeter in its simplest form may consist of a ∩-shaped piece of metal wire (Fig. 3), one end terminating in a round point, the other in a knife edge. This knife edge is rounded or hatchet-shaped. The distance between the centre of the edge *K* and the point *T* may be made 5, 10, or some such convenient number. This length may be denoted by *TK*.

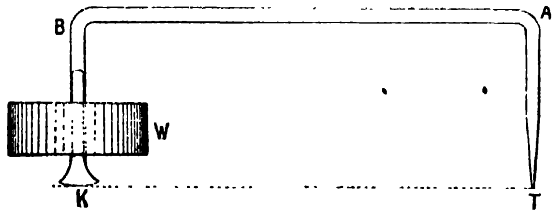

FIG. 3.—Diagram of Hatchet Planimeter

The method of determining the area of a figure by means of this planimeter is as follows:-

(*a*) Estimate approximately the centre of gravity of the area to be measured, and through this point draw a straight line across the figure.

(*b*) Set the instrument so that it is roughly at right angles to this line, with the point *T* at the centre of gravity. In this position a mark is made on the paper by the knife edge *K*. Holding the instrument in a vertical position, the point *T* is made to pass from the centre to some point *P* in the periphery of the figure (Fig. 4), and to then trace once round the outline of the figure until point *P* is again reached, thence to the centre again. In this position a mark is again made with the edge *K*. The distance between the two marks is then measured. The product of this length and the constant length *TK* gives the area of the figure approximately.

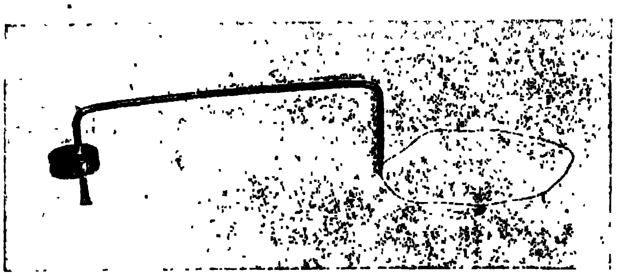

FIG. 4.—Use of Hatchet Planimeter to determine the area of an irregular figure.

To obtain the result more accurately, it is advisable when the point *T* (after tracing the outline of the figure) arrives at the centre, to turn the figure through about 180°, and trace the periphery as before, but in the opposite direction. This should, with care, bring the edge *K* near to where it started from originally. The proximity of these marks depends to some extent on the accuracy with which the centre of area has been estimated. The area of the figure is the product of *TK* and the mean distance between the first and third marks.

To prevent the knife edge *K* from slipping, a small weight *W* is usually threaded on to the arm *BH*; the portion of the arm on which the weight is placed is flattened to receive it. The arm *BA* is usually adjustable, and this enables the instrument to be used, not only for small, but also for comparatively large diagrams.

USE OF SQUARED PAPER.—Two quantities, the results of a number of observations and experiments, which are so related that any alteration in one produces a corresponding change in the other, can be best represented by a *graphic method*, in which it is possible to ascertain by inspection the relation that one variable quantity bears to the other. For this purpose *squared paper*, or paper having equidistant vertical and horizontal lines $\frac{1}{10}''$, ¼″, 1 mm., &c., apart, is employed. As instances of the use of squared paper, the following examples, which make no claim to originality, are instructive:—

To ascertain, without calculation, the number of centimetres in a given number of inches; or conversely, the number of inches in a given number of centimetres. The following list of values is given:—

Inches.	Centimetres.
1	2·54
2	5·08
2½	6·4
3½	8·8

Use the vertical axis *OY* to denote inches and the horizontal axis *OX* to denote centimetres (Fig. 5). Read off 2·54 on the horizontal axis and 1 on the vertical, so obtaining the point *a*. The point *b* is the intersection of the two lines denoting 5·08 horizontal and 2 vertical.

In a similar manner points *c* and *d* are obtained; a fine line drawn evenly through the points enables any intermediate value to be obtained.

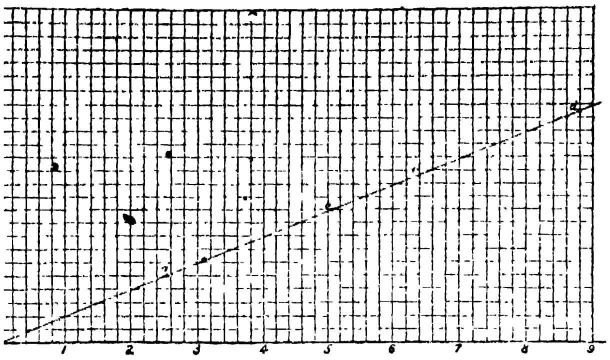

FIG. 5.—Diagram from which to ascertain by inspection the number of centimetres in a given number of inches.

The equivalent value in centimetres of any given number of inches, or, conversely, the equivalent in inches of any given number of centimetres, can be found by inspection by means of a curve, or line, of this kind. In a similar manner, if the divisions on the vertical axis are made to denote square inches, and those along the horizontal axis square centimetres, the conversion from one to the other is readily made. The relation between pounds and kilograms can be graphically represented in a similar manner.

EQUATION OF A LINE.—In the preceding example the position of a point *a* is ascertained, by proceeding along the horizontal axis a distance equal to $2{\cdot}54$ units, and along a line parallel to the vertical axis for a distance of one unit. The vertical distance is called the y co-ordinate, and the horizontal distance the x co-ordinate of the point. In a similar manner the co-ordinates of another point *b* are $x=5{\cdot}08$, $y=2$.

When, as in the preceding example, the relation between the two variables can be represented by a straight line, the *equation of the line* can be obtained.

The equation of the line is of the form

$$y=ax+b \text{ ....(i)}$$

where a and b are constants. Then, if in (i) simultaneous values of x and y are inserted, the values of a and b can be found.

Thus, when $y=1$, $x=2{\cdot}54$;
also when $y=2$, $x=5{\cdot}08$.

Substituting these values in (i) we obtain

$$2=a\times5{\cdot}08+b \text{ ....(ii)}$$

$$\underline{1=a\times2{\cdot}54+b} \text{ ....(iii)}$$

By subtraction $1=a\times2{\cdot}54$

$$\therefore a=\frac{1}{2.54}={\cdot}39.$$

Also substituting this value for a in (i) or (iii) we find $b=0$.

Hence the equation of the line is $y={\cdot}39x$.

Conversely, whenever the equation of a line is given in the form

$$y=ax+b \text{ ....(ii)}$$

by giving to x the values 1, 2, 3..., corresponding values of y are obtained which may be plotted and the line obtained.

Plotting a Line.—In a similar manner to that of the last examples, from a series of values of any two quantities which vary dependently with each other, it is possible, in many cases, by plotting on squared paper, to obtain the line which lies most evenly among the points. The line so drawn will correct errors of data or observation. Having obtained the line, an attempt should be made to find its equation. When the line and its equation have been found, then for any given value of one variable the corresponding value of the other can either be obtained from the line by inspection or from the equation by calculation.

Conversely, given the equation of a line, then by assuming a series of values for one variable, it is easy, by calculation, to find the corresponding values of the other, and to plot them. Exercises of this kind give clear notions as to the exact meaning of the two constants a and b in the equation $y=ax+b$.

It is advisable at the outset to assume definite numerical values for a and b, and to plot the line. When this has been done the constants should be altered and the line again plotted. It will be found that **the slope** or inclination of the line depends on the term a, the point at which the line, or line produced, cuts the axis of y on the term b.

GRAPHIC SOLUTION OF SIMULTANEOUS EQUATIONS.—Two general methods of solving simultaneous equations are usually described. Another, which may be called a graphical method, is furnished by using squared paper. The method applied to the solution of a simultaneous equation containing two unknown quantities consists in plotting the two lines given by the two equations. When this is done, the point of intersection of the two lines is obtained. This is a point common to both lines, and as the co-ordinates of the point obviously satisfy both equations, it is the solution required.

EX. 1. Solve the simultaneous equations

$$\text{(i.) } 3x+4y=18. \quad \text{(ii.) } 4x-2y=2.$$

From (i.) $y=\dfrac{18-3x}{4}$. .... (iii.)

From (ii.) $y=2x-1$. ....(iv.)

To plot the lines it is sufficient to obtain two points in each and join the points by straight lines.

In (iii.) when $x=0$, $y=4{\cdot}5$ and when $x=5$, $y={\cdot}75$, the first gives point *a* (Fig. 6), the second point *b*. Join *a* and *b* and the line corresponding to Eq. (iii.) is obtained.

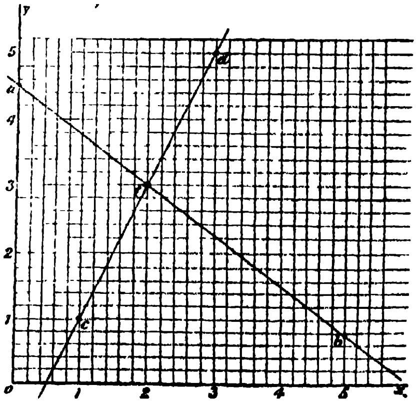

FIG. 6.—Graphic solution of a simultaneous equation.

In Eq. (iv.) when $x=1$, $y=1$, and when $x=3$, $y=5$, the first gives point *c*, the second gives *d*. Join *c* and *d* and the two lines are seen to cross at *f*. This point of intersection is a point common to both lines, its co-ordinates are seen to be $x=2$, $y=3$, and these values satisfy the given simultaneous equations.

Ex. 2. Plot the two lines given by

$$4x+3y=37, \text{ and } 6x-10y=13,$$

and show that the two lines are parallel to each other.

Of course I run the risk, by giving so few cases in which these practical methods may be employed, of weakening what is really an unassailable position. From what I have observed and from what I hear, however, I believe it to be merely necessary to suggest these concrete instances of the way in which theory and practice may be judiciously blended to do a great deal to dispel the gloom of the mathematical class-room, and to quicken the indifference of the ordinary boy usually met with in the ordinary school. If I have done this in ever so small a degree, I shall be more than satisfied.

PRACTICAL WORK IN PHYSICAL GEOGRAPHY.

A SERIES OF NOTES ON EXPERIMENTS AND OBSERVATIONS FOR THE NEW SCHEDULE OF THE CAMBRIDGE JUNIOR LOCAL EXAMINATION.

By Dr. A. J. HERBERTSON, F.R.G.S.

II.—A River and River Action.

VISIT the nearest river. Notice the direction in which it is flowing. If the river is sluggish, it may be necessary to throw a stick or a piece of paper on to its surface to let the pupil see this. Point out the directions of the source and mouth, and then tell which is the right bank and which is the left.

Determine the speed of the river—(*a*) in the middle, (*b*) at the sides—by throwing in floats and noting the time they take to pass between two measured points, say 200 yards apart. This may serve as an introduction to the idea of speed. The necessary calculation to express the speed in yards per minute, by dividing 200 by the number of minutes, will form a useful arithmetical lesson.

Measure the width and depth of the stream at different distances from both banks. The section thus obtained should be drawn to scale in school and the area calculated. This is most easily done by making the drawing on paper ruled in squares, say $\frac{1}{4}$ or $\frac{1}{8}$-inch each, and counting the number of whole squares enclosed and estimating the total number of squares represented by fractions of squares cut by the bed of the river in the drawing. The scale adopted might be $\frac{1}{2}$-inch per yard if the river were only about ten yards wide. Multiply this area by the average speed of the water. This will give the volume of water passing a given point in unit time, and from this the amount per day, per week, per month and per year, may be calculated in the arithmetic class.

A small stream is better than a larger river for these observations. It should be shallow enough to permit the boys to wade across and measure the depth either with a rule or by noting how far the water comes up their legs at every pace, and measuring the height on the leg afterwards, and narrow enough for them to measure its width with a tape or a piece of string whose length can afterwards be determined.

In the case of a wide river the breadth may be determined in the mathematical class by methods to be described in a second series. A useful supplementary lesson is to measure the speed, area and volume of two streams before they meet, and then to make corresponding measurements for the united river, and compare the results.

Another exercise is to measure the breadth, depth, area, and volume of the river at a given spot, (*a*) when the water is high, and (*b*) when it is low. The nature of the particles moved by the water should be carefully noticed under these different conditions. The relation between the speed and volume of the river and the size of the solid particles carried along should be studied at different parts of the stream, where the flow is rapid and where it is slow. (The value of all this as a practical introduction to the idea of momentum, force, &c., will be obvious to every teacher of mechanics.)

Study the bed of a river where the water is clear Notice the distribution of the sand and pebbles. It will not be difficult to account for the distribution by the varying movements of the water. Notice the effect of any big stones in the bed of the river, the hollowing of the bed up stream and the line of *débris* down stream, *i.e.*, crag and tail formation.

Notice how banks get undermined and worn away. Choose, if possible, an area where different rocks occur in the same neighbourhood, as very different forms will possibly be produced. Note where beaches are formed, and notice how the pebbles are arranged in them. Older pupils might be asked to look at the pebbles and compare them with the stones in the adjacent valleys, especially if there happens to be any striking difference.

Observe the banks or beaches most carefully at all turnings of the river, comparing the inner and outer banks and the deposits at the foot of them. Notice the distribution of materials where two rivers meet, more particularly in the tongue of land between the two. A deltaic region can usually be found where some little tributary enters one of the quieter reaches of the river. It will delight the hearts of boys to form a dam at some distance above the mouth of such a little stream, and the action of the gush, formed when the dam is ruptured, on the bed of the river and on the deltaic region, should be carefully observed. There will be no difficulty in inducing boys to repeat this experiment, which is a very valuable one. The movements of the water are more easily studied if the water is made dirty.

In towns where the river is difficult of access, or too large to permit of such observations, rainy days should be utilised, and the macadamised roads especially studied. In the paved roads the different action on the harder cobbles and the softer layers between them may be pointed out.

The action of running water may be studied at the sea-side on a sandy beach when the tide is going back. The different slight irregularities in the surface are soon revealed by the streams of water which flow along the lowest parts and unite to form a larger runlet. This may be compared to a great river-system. By a judicious use of spades and buckets the river can be modified in many ways. The effect of a harder layer of rock may be illustrated by burying a piece of wood near the surface at right angles to the flow of one of the streamlets, and noticing the effect as the erosion of the bed continues. By digging a hollow and forming a lake a delta is usually made, and the filling up of a lake bottom can be studied. This may also be done in the country by digging a channel across a sandy spit beside a river to such an artificial hollow.

The effects of windings of rivers on the different banks, the influence of a large stone, the distribution of *débris*, and many other phenomena of the action of running water, can all be studied in this experimental way by the sandy shore of sea or lake or river.

TEACHERS' NOTES ON ENGLISH HISTORY, 1399-1603.

By C. S. FEARENSIDE, M.A.Oxon.

I.—INTRODUCTORY.

THE period 1399-1603 is one of the alternative periods in English History prescribed for the Oxford Local Examinations, 1901. As this period will probably be more popular than the later and more complicated period offered as an alternative, it is proposed to deal with it in a few practical notes for teachers in THE SCHOOL WORLD. These Notes do not profess to be either authoritative or exhaustive: they will merely attempt to *suggest* a few leading points which educational and examinational considerations combine to render it inexpedient to ignore. The period 1509-1603 has been already handled in these columns (July, 1900); the earlier portion of the period, 1399-1509, will be briefly treated in two articles. The first of these is purely introductory.

In beginning the study of any period of history the first thing to be done is to get some idea of *where we stand* and *what we are to look forward to* during the period. This idea can best be attained by bringing into contrast the then state of things and that with which we are all more or less familiar to-day. In the following remarks some leading points about the state of England in the fifteenth century are set forth in some logical order: it is for each individual teacher to decide how these points may best be conveyed to the class.

I. International Aspects.

(i.) *Smallness of the Known World* (*i.e.*, known to Europeans). England had no dealings with any part of the world save Europe, and practically only with Western Europe. Russia was still part of Asia, and Turkey had not definitely become part of Europe. The East was known only from the reports of a few European traders.

N.B.—During the next two centuries the known world underwent vast expansion. It is recommended that this "smallness of the known world" should be briefly noticed at the very beginning of the course; and that the "expansion" should be traced in a set lecture after the class or classes have reached 1485. The growth of the known world could be graphically exhibited on a blackboard with the help of such books as Jacobs, "Geographical Discovery" (Newnes, 1s.), or Keane, "Evolution of Geography" (Stanford, 6s.), or Beazley, "Henry the Navigator" (Putnam, 5s.).

(ii.) *Ecclesiastical Predominance.* In place of the multiplicity of churches and the existence of large numbers of Englishmen definitely belonging to no Church at all, we find that in 1399 all Englishmen were members of a single Christian Church—the Latin or Roman division of Christendom. The Greek or Eastern division of the Catholic Church was being hard pressed by Muhammadans of Turkish race (Ottomans); the Latin or Western division was weakened by the **Great Schism** (*i.e.*, dissensions among its members as to which of the claimants was the rightful **Pope**), and by many attacks not only on the abuses, but also on the fundamental principles of the Church. In England the extreme reformers were called "**Lollards.**"

N.B.—During the next two centuries the Western Church broke up into various churches, under the influence of the varied reforming movement emphatically known as "the" **Reformation.**

(iii.) *England and its Neighbours.* The British Isles were far from being politically united, and there was no "British Empire." The small and weak kingdom of England had a standing hostility to the still smaller and weaker kingdom of Scotland. Scotland was usually allied with France; England was usually friendly with Castile and Portugal (two of the Iberian kingdoms), and with the Roman Empire (which roughly corresponded with Germany). Also it had close commercial relations with the Southern Netherlands (especially Flanders), with the Bordeaux wine district, and with the Baltic Lands.

N.B.—Before the end of our period Englishmen had sailed round the world (*e.g.*, Drake, 1577-1580), and begun trading with the Far East (East India Company founded, 1600); and in 1603, at the very end of our period, the Scots King succeeded to the crowns of England and Ireland, and thus effected the political union of the British Isles.

II. Constitutional Aspects

(to be contrasted with our own times).

(i.) *The King* was the actual ruler of the country, and, if weak, was liable to be put out of the way; he had a hereditary revenue of his own which was expected to be ample for his personal and political expenses (not yet distinguished); he could choose his own ministers, and, with his council, he practically controlled the legislation as well as the administration of the country.

N.B.—Legislation played nothing like so prominent a part in politics as it does in our own days.

(ii.) *The Lords* were owners of large estates, and many of them were almost as powerful as the King himself. In the fifteenth century they trampled on the King, in the sixteenth century the Tudors trampled on them. In the House of Lords the Lords Spiritual (usually drawn from noble families) exceeded the Lords Temporal in number (until 1540).

(iii.) *The Commons* included (1) those represented, (2) those not represented in the House of Commons. The franchise was not valued; members were paid for their services by their constituencies, and the House of Commons was throughout our period of secondary importance (which does not mean that it was entirely devoid of importance).

N.B.—The "three estates of the realm" were **not** the above, but CLERGY, LORDS, COMMONS.

III. Social Aspects

(to be contrasted with our times).

(1) English was superseding French as the literary, as well as the speaking, language: **Wyclif, Langland, Chaucer, Gower**, &c.

(2) Great mass of the population was just emerging from the state of serfdom (**villanage**) into the more dignified, but more precarious, condition of the hired labourer.

(3) Striking differences from nowadays. No clear distinction between town and country; no large towns; north and west were the least advanced parts of the country; few manufactures and no factories; most of the foreign trade in the hands of foreigners; no good roads, still less railways, telegraphs and cheap and regular post; little travel and little popular education; no tea, coffee, cocoa; no fresh meat in winter; few vegetables; no gas, no matches, no policemen, and no sanitation.

N.B.—These social aspects cannot be adequately understood or taught by means of the mere words of a text-book, however good; in this branch of historical study, beyond all others, the use of *illustrative* matter is indispensable. Some chosen specimens of fifteenth-century English are given in Professor York Powell's "School History of England" (which is especially helpful on the social side). The daily life of the times can be most easily realised by reading (not indiscriminately and without guidance[1]) a few historical novels and tales. The costumes and buildings of the time are fully illustrated in the pictures contained in the better text-books and elsewhere. Most teachers are now agreed that no text-book can be considered suitable for the Junior or the Preliminary stages unless it contains pictures, and good pictures.

IV. —Bibliography.

(I.) *Text-Books.* In no grade is there any text-book of such surpassing merit that its superiority is generally recognised. A list of books useful to teachers was given in the September, 1899, issue of THE SCHOOL WORLD.

(II.) *Special Period Books* (1399-1509). The best large book by a modern authority is the third volume of Stubbs' "Constitutional History" (1399-1485). This may be followed up by the first volume (1485-1509) of the English translation of Dr. Busch's "England under the Tudors" (Innes, 16s.). Miss Thompson's "Wars of the Roses" contains a selection of extracts from contemporary writers (Nutt, 1s.). There are three excellent biographies bearing on the period, viz., "Henry V.," by A. J. Church; "Warwick the King-Maker," by C. W. Oman; and "Henry VII.," by J. Gairdner (Macmillan, 2s. 6d. each). The first two of these may be read with interest and profit by the pupils themselves, and should be in the school library. Constant (but again, not indiscriminate) use should be made of Shakspere's historical plays.

(III.) SCHOOL WORLD *Articles:* Besides the two mentioned above, the following may be mentioned as bearing especially on this period:—

(1) "Chapters in History," by A. J. Evans, Nos. VI.-IX. (July, October, 1899; January, June, 1900).

(2) "Beginnings of English Colonisation:" Notes for Lantern Lectures. By C. S. Fearenside and A. J. Evans (February, 1900).

(3) Topics Arranged Alphabetically, 1399-1603 (for revision): June, 1899.

THE TRAINING OF ELEMENTARY TEACHERS.

THE report of Mr. W. Scott Coward for the year 1899, on the Training Colleges for Schoolmasters and Schoolmistresses in England and Wales, provides a considerable amount of material for earnest thought on the part of the responsible authorities of the Board of Education. There is little fault to be found with the work actually accomplished, but there is grave reason to fear that the curriculum is too academic, and that too little attention is given to the science and art of education. Many reasons have conspired to bring about such a state of affairs. The preliminary training received by pupil teachers is inadequate; the result is that the greater part of the first year's work at the training college has to be devoted to imparting instruction which might very well have been given during the student's apprenticeship. The present second-year's work might, with very little difficulty and very few changes, be made into the first year's work of all future training-college students. This change would set free sufficient time during the second year in which to satisfactorily study, in both a practical and theoretical manner, more strictly pedagogical subjects. The following abstract of several of the interesting points raised by Mr. Scott Coward will serve to indicate the nature and value of the work of our training colleges for elementary schoolmasters and mistresses.

University Courses in Day Training Colleges.

Speaking of the resolution of some of the governing bodies of the day training colleges to admit none to their colleges who do not consent to take a degree course, Mr. Scott Coward says it is no doubt an intelligible and perfectly defensible course to pursue, if care be taken to admit only such candidates as are proved to be fit to follow a university course of studies in addition to their strictly technical training. And this care is often taken; but even with such conditions the effort to compass such a course of study involves a very heavy strain, especially on the women, and on the men who select the science course. And in those cases in which the precaution is not taken, as happens often in the residential colleges, much harm is done without any of the compensation of the gain to the teaching profession of persons of solid acquirements. For most of this class of students, if they have gained a certain amount of superficial knowledge, have not acquired any taste or liking for the subjects they have been drilled in, and know too little of them to be able to teach them in a manner calculated to influence and form the minds of children. The subjects have been studied in their more elementary stages, and by minds whose stage of development is above these levels. The drudgery involved in mastering dry grammatical facts and rules, or in efforts of mere memory to retain for reproduction matter ill, if at all, understood wearies and exhausts, if it does not sicken, and fails to produce teachers able to treat the subjects with which they have thus struggled with breadth and interest.

I believe with increasing conviction that the policy of forcing unfit students through University courses is of more than doubtful expediency; and I am certain that more good results to education from building upon foundations strong enough to bear the weight of superstructures suitable to them.

The Small Number of Third-year Students.

The small number of third-year students in the residential colleges is, I think, a matter for regret. Its causes are the restrictions set to its extension by the regulation which requires the special sanction of the Department to the continuance of training over a third year, and to the unwillingness of students and their parents to postpone for a whole year the earning of money. This latter is undoubtedly the main cause, which no relaxation of the Departmental rule, above alluded to, would to any appreciable extent affect. The students are drawn from an unmonied class, who can ill afford to continue outlays that strain and pinch them.

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[1] [Some such guidance will, it is hoped, be attempted in an early number of this magazine.—ED.]

But it is in the third year that the student begins to see with the full power of his mental vision into the nature and meaning of educational principles, to grasp the value of proper methods of practice based upon them, and to appreciate the importance of carefully applying them in every stage, and to every subject of education. I am always struck with the treatment of junior classes and the subjects of their instruction by teachers of this grade. It is marked by a sense of the importance of dealing with them with as much effort, attention, and sympathy as they would bestow upon the highest class, and by an increased elasticity, resource, and force. We could secure the same results by raising the training of the second year to the level of the third. There is no reason why, with our improved and improving means of instructing the pupil teachers, the first year's syllabus should not be that of the present second year.

Inadequate Means of Training.

At the Queen's Scholarship Examination at Christmas, 1898, no fewer than 11,631 candidates were examined, of whom 8,189 were qualified as Queen's scholars to be admitted to training colleges. But there was room for not 3,000, probably not for more than 2,400. So that, at the latter estimate, 3,789 young persons, the great majority of whom earnestly desired to qualify themselves properly for their life's work, were unable to do so, and had to attain recognition as teachers by passing through what I cannot help calling the back door. That is by passing the Government examination prescribed for acting teachers with the most inadequate preparation of a heavily burdened course of study pursued amid the labour of School work, with indifferent and insufficient instruction, and with too little time to digest and understand the true meaning and importance of the theory of education as bearing upon its practice. Measure the value of the work of this vast body of teachers thus prepared, who pass annually into the schools of the country, and think what it must be, compared with what it might be were they properly prepared. Without detracting the least from the good and conscientious efforts of these teachers, or minimising in any degree their usefulness relatively, still it is impossible to deny that their value to the nation is much less than it ought to be, and that the national life, as far as education can form, mould, and direct it, must suffer seriously. It must be so, or there is no value in training, and we have been indulging all these years in a needless luxury in expending the vast sums on training which have been devoted to it. No one who is acquainted intimately with the elementary schools of the country can fail to be struck with the distance in character which, as a rule, separates the instruction of a school taught by a trained teacher from one taught by an untrained. I do not mean to say that there are not many schools taught by the former class equal in every respect to the latter. But that is only to say that exceptions prove the rule, and that there are many born teachers. The broad indisputable fact remains, notwithstanding, as I have tried to state it, and is one well deserving of the attention—the serious attention — of the country, with the view of providing a speedy remedy for it. It is not for me in a document such as this to prescribe its nature. My duty is to indicate the defect and to show its consequence.

Instruction too Academic.

At present the academic character of the instruction results in a scramble for the first class, since excellence in many subjects must be achieved to attain that end, the effort necessary to be used rendering it impossible to devote adequate time and thought to a wide and careful study of professional ones. The marks which the bulk of the academic subjects carry quite outweigh those of the latter. The consequence of this is that the student and not the child is the main aim of the training. The college must, to maintain its character and name, do this, while the student no less is driven to do the same.

Fewer academic subjects, a wider and deeper study of professional ones, and the abolition of classification according to order of merit to be replaced by an alphabetical one, would do much to remedy this evil. Our students, if they are to be educators, and not merely instructors of our children, need to be brought into more intelligent, more sympathetic touch with human life in its many aspects. They need to know with a greater reality that to teach subjects of instruction is but a third of their work, which in its remaining two-thirds has relation to the formation of mental and moral character. But the knowledge they need can only be attained by reading, reflection, and observation of a special kind, for which, however, no opportunity can be found in the stress of preparing many subjects for examination.

Advance in Methods of Training now Necessary.

I have been endeavouring to indicate what seem to me the defects in our training that retard its fuller development into a state commensurate with the needs of our national life at this moment. I have no wish to belittle its excellences, which are numerous and solid. They are defects which have become so merely by the fact that they are survivals of a past, when they were effective and necessary, but which, being left behind by the onward movement of thought, have become anachronisms, and harmful. It is time that they should give place to methods more in harmony with the present.

We have attended so closely to the schools that we have forgotten the colleges. While providing schools we have omitted to provide teachers, and while we have recognised the vital principle that liberty and freedom of teaching, within due limits, are essential to any true advance in education, and have issued a code embodying this principle, we have not borne in mind that, to make such a principle effective in fact, teachers capable of understanding the new departure and of rising up to it in practice are needed. For we have left the places which alone can produce those teachers in comparatively the same state which they occupied some fifty years ago.

What is needed is a new departure in the spirit of the new code. The aim to produce masters and mistresses liberally educated, full of resource and sympathy, and able to mould into gracious forms and noble character the youth of the nation.

The point that still needs attention and effort is that of the professional training of the students, which remains still too narrow, too limited. Its measure is no doubt in proportion to the time devoted to it, and to the methods by which it is in the main conducted. The theoretical side of it is often poor owing to the want of sufficient knowledge on the teacher's part to treat it effectively; and on the practical side it fails for the same reason partly, and also through the want of good practising schools, of proper supervision, and for other reasons.

How to Widen Professional Training.

To turn out a good teacher, that is to say, a teacher who is an educator and not a crammer, is needed, first and foremost, adequate curriculum of theoretical learning directed by a person who is sufficiently widely read in its subjects to be able to give to the students a wider view and a deeper insight into matters educational than are as a rule now presented to them. Next, a more carefully organised system of practical training. By this I mean a training carried out in schools in which may be seen at least suitable, if not excellent, types of school architecture, where the lessons may be given and heard in the isolation of separate class-rooms, and in which the methods of discipline and instruction are in conformity with the doctrine of the college on these points. And lastly, more time should be devoted to these exercises if they are to be productive of good in adequate measure and of permanent duration.

This is a most important point. It is not possible, I consider, in the small amount of time now devoted to the pedagogic training of our students, either to deal fully enough with the theory of education so as to impart sufficient knowledge of it, or to make, what is of most importance, impressions deep enough to last them through their lives. And as to practice, with the average student, the time devoted to it, even in the best conditions, is so absurdly small that it barely suffices even to eradicate old, faulty ways, without mentioning the creation of new and better ones, and for the presentation of the best methods of teaching the various subjects that go to constitute the curriculum of a school. It is urged, and not without reason, that so long as the academic side of the training remains as predominant as it does, it is impossible to extend the time now given to the professional training. That is, of course, the result of the defective instruction of most of the students on admission. But I see no reason at all why that cannot be remedied. If the requirements of the syllabus for pupil teachers were to be substantially raised, especially in the lower years, we should in a short time find our first-year students equal, on the whole, to those of the present second year. This would set free a large margin of time which could be devoted to the fuller moulding of the students into teachers.

In that broader and fuller training there would be this great moral gain. The student, as I have said above, would learn to think more of the child, less of himself; and there would be engendered that wider sympathy with his work which always springs out of a firmer hold and a fuller knowledge of it.

No one should be admitted into a training college who requires to be taught the alphabet almost of the great majority of subjects. Let us have a pupil-teacher course ending in a syllabus which shall be a true connecting link between the education of the pupil teacher and of the training-college student.

Summary.

The spirit which now animates these institutions, imperfect as they are, if my estimate is correct, is a hopeful one. It is ready to act generously in any forward movement. It is growing to recognise more fully the enormous importance to the strength, the intelligence, the morality, the religion of the nation that it should possess a body of intelligent, earnest, high-minded and contented teachers, and to feel that that body can only be produced by the adoption of every possible means by the training colleges; and in this conviction it is laying itself out to make them as efficient as they can be made. The students are liberally treated, they are comfortably housed, well fed, and are living in a reasonable atmosphere of refinement, and are taught as carefully and diligently as they can be. But material comfort and material improvement are not sufficient to create educators of youth; much more is needed for that. I have indicated above some of the conditions necessary to attain this. Only when they are in existence, but not until then, shall we be able to regard the battle won, the position safe. In a word, we need a fuller system of training, a lighter burden of purely academic learning; we need to make *the child* the main and the most prominent object of the student's vision; we need better practising schools; we need, too, more training colleges, without which we cannot remedy our crying defect—the need of more trained teachers.

THE REORGANISATION OF HIGHER EDUCATION IN SCOTLAND.

LORD BALFOUR'S term at the head of the Education Department in Scotland will always be memorable by reason of the important and far-reaching reforms that have distinguished his administration. Happily for Scotland, the education question is not affected by political bias, and educational problems can be grappled without political or sectarian jealousies being raised. Lord Balfour's efforts to put secondary education on a thoroughly sound and satisfactory basis were therefore heartily welcomed by the whole country, all the more because there was a general and growing conviction among all classes that, owing to the lack of method and the total absence of organisation and direction in higher education, the nation was steadily falling back from the foremost position it had long occupied in the educational race. By what may be termed the Educational Reform Bill of Lord Balfour—the Code of 1899 and various departmental minutes—the State for the first time takes official supervision of higher education in all its branches. Three classes of schools are formally recognised as giving such education, viz., Higher Class Schools (including organised science schools), Higher Grade Schools and Advanced Departments. To a limited extent, as will be seen later, these names connote the nature and extent of the education given in each class of school.

Higher Class Schools.

Higher-class schools answer generally to the first-grade schools of England (adopting the terminology of Parliamentary Commissions), and are intended for pupils likely to continue their education to 17 or 18 years of age. The regular curriculum embraces a course of study for four or five years. Such curriculum may include parallel courses on the classical, commercial or scientific side, but in every case the Department must be satisfied that there is a sufficiency of staff for each course, and that the pupils pursue the same course throughout. The fees in the higher-class schools are prohibitive to the great majority of pupils, but provision has to be made by bursaries and scholarships to enable "lads o' pairts" to proceed to them. Provided these regulations are fulfilled, grants on a most liberal scale are now available from the Department and the County Council. A fresh lease of life has thus been given to this class of school, many of which had formerly a hard struggle for existence owing to the keen competition of the higher elementary schools and the inadequacy of the endowments. Higher-class schools are recognised by Lord Balfour "as having a first and indefeasible claim" upon the funds allocated for secondary education.

But, important as have been the services rendered to the nation by these schools, it must be remembered that they are very limited in number, and that there are whole counties in Scotland as well as wide districts without a single higher-class school. For this reason, and also on account of the considerable fees of the high schools, the great majority of the nation have to depend for their higher education on what are now termed Higher Grade Schools and Advanced Departments.

Advanced Departments.

Advanced Departments are intended, like the *cours complémentaires* of the French system, for pupils who are likely to remain at school for only one or two years beyond the Merit Certificate stage. A normal grant of fifty shillings is paid on each pupil in average attendance, which may be increased or diminished by one-tenth for excellence or default respectively. In addition, special grants are given for practical instruction in science, woodwork, cookery or laundry, which may bring the total grant in an efficient school up to seventy shillings per head. The curriculum has to be approved by the Department, but teachers are allowed very considerable freedom in their choice of subjects and allocation of time.

Higher Grade Schools.

Higher-grade schools are no new thing in Scotland except in name. Higher education has been a feature in many of the State-aided schools since the passing of the Education (Scotland) Act of 1872. This has not been done on sufferance as in England, where the auditor has just awakened to the illegality of the proceeding, and has refused to pass the accounts of the higher-grade schools. On the contrary, the policy is expressly sanctioned by the Act of 1872, whereby a sum of money is annually voted by Parliament "For public education in Scotland." Unfortunately for the higher-grade schools of England, the corresponding words in the English Act are, "For public *elementary* education." Many of the Scottish School Boards took an enlightened view of their duty towards education, and empowered by the words already quoted, liberally subsidised secondary education in the ordinary schools. The success of such schools, at the Leaving Certificate Examination and at the bursary competitions of the various Universities, proves how thoroughly the traditions of the old parish schools were followed out. Notwithstanding this success, it must be admitted that there was a total want of unity of aim and direction in these schools. As regards organisation, curriculum and standard of efficiency, every headmaster was a law to himself. It is from this disjointed and irresponsible condition that higher education has been rescued by the establishment of higher-grade schools. Such schools are to be no longer a mere congeries of classes, but, as stated by Lord Balfour, are to provide a thorough training according to a well-defined curriculum, the parts of which would not only have a relation to one another, but to the ordinary and essential parts of a general education.

These higher-grade schools are primarily intended for pupils whose school life will continue to the age of 15 or 16, and must provide a curriculum of not less than three years beyond the Merit Certificate stage. As the Education Act of 1872 provides for the payment of grants to pupils till the age of 18, many higher-grade schools have made provision for a fourth and fifth-year curriculum.

Higher-grade schools may give an education which is either predominantly scientific and technical—higher-grade (science) schools—or predominantly commercial—higher-grade (commercial) schools—or they may give a course which is specially suited to girls or to particular classes of pupils.

But whatever the course or courses adopted, the Department must be satisfied that the school possesses the proper provision of class-rooms, laboratories and workshops necessary for the particular type of education professed. "The teaching of each subject must be in the hands of adepts specially qualified, and not entrusted to one teacher who is a prodigy of impossible accomplishments."

At first the Department tried to force the policy of one school one course, but this was found to be so alien to the whole system of Scottish education in the past that they now allow alternative courses in the same school, so that "higher-grade schools with their classical, commercial, and scientific sides give official sanction to the immemorial usage of Scottish schools."

In all higher-grade schools the curriculum must embrace English, History, Geography, Arithmetic and Drawing. In addition, pupils in a science course must take Mathematics, Experimental Science, and some form of manual work; in a commercial course, one or more modern languages, book-keeping, shorthand, and knowledge of commercial products; in a girls' course practical training in household economy. In the first year the courses may be identical, and teachers are wisely taking advantage of this permission to delay specialisation for another year. In the second and third year eight and ten hours respectively must be assigned to science or modern languages, according to the course taken.

Grants.

The grants are, for first-year pupils, 50s.; for second-year pupils, 70s.; and above the second year, 90s. These may be increased by one-tenth or diminished by one or more tenths for excellence or defects. In addition, special grants are paid for experimental teaching in science, woodwork, laundry or cookery. A thoroughly efficient school may thus earn, it is calculated, grants up to £6 per pupil in the third and succeeding years.

Conditions.

The essential conditions are:—

(1) That the pupils possess the Merit Certificate.

(2) That specially qualified teachers are provided for every 30 scholars in average attendance.

(3) That there is a proper provision of class-rooms, laboratories, and workshops.

(4) That separate accounts and separate registers are kept.

(5) That the instruction is practical and experimental—quality rather than variety of work being the desideratum.

Comparison with Higher Grade Schools in England.

It will be noted from these conditions that the features which have been most assailed in the Minute establishing Higher Elementary Schools in England are totally absent in the Scottish system. Grants will be paid on pupils up to the age of 18, and though the grants then cease, the pupils can still continue at school. (Many schools have at the present time pupils over 18 years of age preparing for the London Matriculation and other examinations.) Teachers may be engaged partly in the elementary and partly in the higher-grade school, and finally, attendance at an elementary school for at least two years is not a condition of entrance into the higher-grade school.

One advantage, however, the English schools have over the Scottish is that secondary education is recognised as beginning two years earlier. In England ability to pass the IVth. Standard is the requirement, while in Scotland the possession of a Merit Certificate is demanded, which means an exceptionally good pass in the old Standard VI. It will be generally agreed that this is too late to begin secondary subjects, which if delayed till that time can never be fully mastered. The Merit Certificate is excellent as the Leaving Certificate of the elementary school, but wholly unsuited to be the passport into a secondary school, as neither science nor languages are required for it.

The Department attempt to get over the difficulty by insisting on a preliminary training in higher subjects in the senior division of the higher-grade school. This gets over the difficulty so far as these pupils are concerned, but higher-grade schools are in all cases the centres to which are drafted the promising pupils from many surrounding schools. No provision for preliminary training is made in their case, and entering the higher-grade department, they complicate the curriculum by being unable in several subjects to take their places alongside the other pupils. These difficulties are so patent that they cannot fail to be recognised by the Department, and one may confidently look for a speedy remedy.

Whether all the great results that are confidently looked for will follow from the new order of things in higher education has yet to be proved, but at least a statesmanlike effort has been made to grapple with a vital problem, and the rest is on the knees of the Gods.

THE UNIVERSITY EXTENSION SUMMER MEETING, CAMBRIDGE, 1900.

(FROM OUR CAMBRIDGE CORRESPONDENT.)

"THE general subject of the meeting," runs the official statement, "is *Life and Thought in England in the Nineteenth Century*." Thus there is an unusual degree of unity about the subject of the Summer Meeting this year; but this unity certainly does not extend either to the motives of those who have been members of the Meeting, or to the estimates made by the members concerning the relative merits and interest of the innumerable lectures provided for their benefit. It is necessary to state this variety of motive and appreciation before one can safely proceed to set down one's impressions—mainly direct, but also largely influenced by the reported impressions of other people—from the point of view of the practical teacher. What have we, as teachers, got out of it all? Have we gained enough to induce us to go again? Are we sufficiently certain of our gains to venture to recommend our friends and neighbours at least to consider the advisability of going? To these questions an indirect, but tolerably decisive, answer is contained in the following facts. In talking with members, I have found many who habitually attend Summer Meetings, I have come across none who regretted coming to Cambridge this year, and I have heard several resolutions to attend the Oxford Meeting next summer. Now a considerable proportion of the members belong to the teaching profession, and these give a third, or possibly two-thirds, of their summer holiday to the really hard work of attending lectures—possibly five or six in a single day. Why? What do we get out of it? What, as a matter of fact, have we gained, as teachers, by attending this particular meeting, which is, at the moment of writing, more than half over? I set down the gains as they occur to me, without attempting to range them in order of importance.

First of all, we have gained a valuable lesson in organisation. The time-table is itself a triumph of organisation, and reflects the greatest possible credit on the unwearying exertions of Dr. Roberts. Roughly generalised, the time-table for most days during the first part (August 2nd-15th) runs like this:—

A.M.	9.0.	Literature and Science.
	10.30.	Political History.
	12.0.	Social Development.
P.M.	2.30.	Sectional Meetings, Conferences, &c.
	3.45.	Social Work.
	5.15.	Education.
	8.30.	Biography.

Unavoidable alterations in the time-table have been effectually and promptly made known to all; punctuality has been quietly enforced; and every possible help has been given to strangers in Cambridge, and especially to the numerous foreign visitors. The organisation has extended to the care of carnal comforts (such as providing afternoon tea at the Reception Room), and to facilities of recreation, as in publishing a handy booklet of hints to cyclists for rides in the neighbourhood of Cambridge. Now all this has, I take it, a direct bearing on educational matters. We have all become familiar with Mr. Matthew Arnold's cry, "Organise your schools," and this cry has been often met by the counter-cry, "Leave us our liberty, and don't strangle us with red tape." Dr. Roberts has shown that the two ideals are perfectly compatible. He has organised, but yet has left us a full measure of liberty. The unity of the Meeting rests mainly on a historical basis, and the Meeting itself is professedly educational: quite properly, therefore, pains have been taken that there should be no "overlapping" of lectures at the hours of 10.30 and 5.15. There has been a general order, but no hard and fast rigidity, in the arrangement of the lectures. So too with the treatment. The general subject of (nearly) all has been the nineteenth century; but evidently no attempt has been made to prescribe a dull uniformity of treatment. We have had lectures with lantern pictures and lectures without, lectures read word for word from a paper, and lectures delivered without a shred of notes, lectures declamatory and lectures anecdotal, lectures which skimmed the surface, and lectures which tried to probe to the heart of things, lectures in the Senate House and in the New Theatre. There have been at least a dozen different views aired as to "the most essential characteristic of the century." It has been made manifest that organisation does not necessarily mean the suppression of variety and individuality.

Secondly, we have heard "the living voice" of some of the first authorities in the land on their respective subjects. We have had the glories of the firmament and of astronomical discovery revealed to us by the infectious enthusiasm of Sir Robert Ball; and we have heard Macaulay vindicated as a Historian in the polished periods of Sir Richard Jebb. Professor Dicey has delighted us one day with a calm and philosophic account of the development of law, and the next day Dr. Reich has passionately prophesied to us concerning Nationality. We have heard the literary giants of the early years of the century appraised, with most illuminating variety, by such masters as Mr. Myers, Mr. Churton Collins, Mr. Wicksteed and Professor Knight. Equally eminent men of science have, without impoverishing themselves, sought to enrich us with the cream of their varied wisdom. Two Masters of Colleges have treated us to physical as well as intellectual entertainment; and the Leader of the House of Commons has "given up some of his scanty leisure to the delivery of an inaugural lecture." Books are doubtless admirable as sources of information; but no one who has watched the audiences of these and other distinguished men and women can doubt the greater stimulating influence of the spoken word—when it proceeds from one who combines even tolerable gifts of utterance with a full or clear or aspiring knowledge of his subject. Good seed has been sown, and much of it without doubt has fallen on good ground.

Thirdly, there have been many discussions—formal and informal, connected with the lectures, and on other subjects—among many, hitherto strangers, who have a common interest in things other than "the business or pursuit which occupies the greater part of their time." Above all, teachers of all grades have gathered together and exchanged ideas. Besides the formal conferences and lectures held in connection with the Summer Meeting by the National Home Reading Union and other bodies, there has been many a fruitful conference quite informal among teachers and others interested in Education. One often hears complaints of the "apathy of the teacher"; but that is certainly not the aspect of the teacher which most struck one as one noticed the eager faces at the lectures on Education or the rush of hearers to interview the lecturer at the close. Still, it is undoubtedly true that most of the 5.15 audiences were composed mainly of women, and that the few men present were largely foreign visitors, not English male teachers. Women do not figure prominently among the lecturers, but they have been the busiest workers at the Conferences, in committee work, and in getting up the suggestive Educational Exhibition at the Women's Training College in Wollaston Road.

Fourthly, and lastly, what of Education in the technical sense? Fifteen lectures and five conferences or discussions have been assigned to Education in the Syllabus for the whole Meeting; and the greater part of this programme has been carried out at the time of writing. And in addition to these set discourses, many of the other lectures and proceedings have, consciously or unconsciously, aimed at the direct advantage of the teacher. Some of the Education lectures have been historical and descriptive, others have been rather didactic and hortatory. Practically all the lecturers took care to point out that Education was in a parlous state at the beginning of the century, and that it has been improving in all respects—in the proportion of the inhabitants affected, in the methods of teaching, and in the conception of the object of Education—at an accelerating pace as the century has drawn towards its close. Some of these papers will doubtless appear in THE SCHOOL WORLD; and there is a general agreement that none were unworthy of the occasion, and that all might with advantage be submitted to a wider public than can be accommodated in the Anatomical Theatre.

It is quite impossible to give an adequate summary of a dozen hour-lectures in a dozen lines; but it is worth while to record a few commonplaces—that is, a few points of "undesigned coincidence" among two or more lecturers. For instance, the wide-spread influence of Dr. Arnold; the belief that external examinations had so far done more good in forcing schools to "level up" than harm in bringing about a system of unintelligent cramming; the opinion that the progress made during the last thirty years warranted us in hoping for a continuance of improvement, but by no means in adopting an attitude of self-complacency. Miss Gadesden, of the Blackheath High School, reviewed the progress of secondary education for girls in an extremely favourable light; but most of her colleagues seemed inclined to dwell on our defects rather than on our merits. "Registration," "training," "co-ordination," were naturally among the most frequent points of comment; but no single matter was so universally emphasised as that to which all these things lead—*i.e.*, keeping clearly in view the object of education. Training, not stuffing; education, not instruction; "one *thinking* boy is worth twenty *learned* boys." And in order to produce your "thinking boy," there was one constant prescription offered: "get him to do things for himself,"—helping him but not doing it all for him. Dr. Kimmins—who urged this method with especial reference to science teaching, and showed that it actually "paid" even from the standpoint of immediate results—illustrated what he meant by a charming story from Miss Edgeworth, telling how a little boy and a little girl discovered for themselves how rainbows were made.

The Summer Meeting was not a training college nor even a teachers' congress: the lecturers did not, therefore, seek to show *how* these things were to be done, but simply sought, and sought successfully, to show that it was desirable, possible and quite "practicable" for teachers to teach as well as instruct. And in many lectures, outside as well as inside the Education division, there were thrown out many practical hints at which teachers present jumped with the agility of a cat, as represented by Dr. Hill. Such hints were especially frequent in the case of the science lectures, where simple experiments, suitable for repetition in school teaching, were described or shown; but they were by no means confined to the spheres of science and experiment. Dr. Haddon and Mr. Oldham—though both somewhat severely criticised as to the *form* of their lectures—not only supplied many useful suggestions as to the methods and uses of *observation*, in the fields of anthropology and geography respectively, but also sallied forth with their flocks to show them how to observe things in Fen and Down. But the most ingenious teaching device that came under my notice was in the not very promising subject of History. Mr. J. W. Clark exhibited the growth of the university and colleges in a graphic way by starting with a physical map of the district, and having pieces of coloured linen pinned on the map from time to time to represent the various institutions whose foundation he described in chronological order. This seems to be a feasible way of meeting the difficulty of getting adaptable wall maps to illustrate historical geography.

I should like to recommend all who are interested in the Nineteenth Century, especially teachers, to procure the "Book of Syllabuses of the Lectures" (paper covers 1s.; cloth, interleaved, 1s. 6d.). This book, a new experiment of the summer meetings, contains not only suggestive outlines of most of the lectures, but also very useful hints as to further reading.

ITEMS OF INTEREST.

GENERAL.

WE publish this month the first of two test-papers which together cover the syllabuses, in the subjects selected, of the Senior, Junior, and Preliminary Cambridge Local Examination of December next. The second sets of papers will appear in the November issue. Next month a series of revision tests for the Second and Third classes of the College of Preceptors Pupils' Christmas Examinations, 1900, will appear. The subjects selected for treatment are those offered by the largest number of candidates, though it is worth while to point out that certain of the many set subjects in Religious Knowledge are intentionally omitted because suitable questions have already appeared under the heading of the Oxford Local Examinations in the first five numbers of THE SCHOOL WORLD for this year.

THE Education Bill, 1900, is dead. It was read a second time in the House of Lords, but did not get so far as this in the Lower House. Of the anomaly of a Bill withdrawn in the Commons proceeding to a second reading in the Lords, it is here unnecessary to say anything. The Bill is dead. As to whether it will again see the light, there is no means of judging. At all events, it has provided material enough for much discussion. Already different educational associations have started its dissection, and unfortunately the religious difficulty has been raised by the Archbishop of Canterbury. But discussion is always good, and we are sure that the aggregate wisdom of the great body of teachers in this country will do a great deal towards clearing up many difficulties and obscurities which exist. Some day perhaps we shall have a rational system of secondary education, properly correlated with elementary education on the one hand, and with University education on the other; but the time is not yet!

THE minute providing for the establishment of higher elementary schools does not come into operation until the beginning of the school year on October 1st, so its effect can scarcely yet be estimated. A reply by Sir John Gorst to a question asked in the House of Commons at the end of July is, however, noteworthy. The Vice-President of the Committee of Council on Education was asked what number of the higher-grade schools formerly conducted by School Boards and the managers of voluntary schools had been discontinued since the introduction of the New Code and the minute providing for the establishment of higher elementary schools, how many applications had been made to the Board of Education for the conversion of higher-grade schools into higher elementary schools, and how many applications had been made for permission to create new higher elementary schools under the said minute. The answer given was that no higher-grade schools had been discontinued. About 190 applications had been made to be recognised under the minute, and it is significant that most of them were accompanied by an intimation that the managers desired various modifications of the minute in order to enable them to comply with some of its terms.

IN reply to a series of questions from the Accrington Educational Council, in regard to the establishment of higher elementary schools, the Board of Education states: (1) That such schools cannot be set up in connection with existing elementary schools. Higher elementary schools must be complete in themselves, and not part of existing schools. (2) The buildings of a former ordinary elementary school may, if suitable, and if properly equipped, be used for the purposes of a higher elementary school. (3) Any responsible body of managers may carry on a higher elementary school, but town councils or technical instruction committees will not be permitted to use public money for their establishment. (4) Substantial fees may be charged. (5) A fair proportion of the scholars will be required to remain for a four-years' course.

THE Elementary Education Bill received the Royal Assent in the House of Lords on Monday, August 6th, as also did the Intermediate Education [Ireland] Bill.

THE election of Mr. W. H. D. Rouse, of Rugby School, to be honorary secretary of the Assistant-Masters' Association has had the immediate effect of increasing the membership of the Association among assistant-masters in the larger public schools. This is partly the result of a letter which Mr. Rouse addressed to some two thousand of these public-school masters. In his letter Mr. Rouse points out that our first need is a truly representative body of teachers, bound by common aims, which may record professional experience, and, through its officials help the Government in the task of organising Secondary Education. We hope the first list of new members from these great public schools is but the beginning of an increased interest of which news reaches us from time to time.

PERSONALLY we are more hopeful of the good results likely to follow if work, in the direction indicated in another sentence in Mr. Rouse's letter, be entered upon. "It is necessary, and it is quite possible, that the experiments (in education) already made on a small scale should be recorded for warning or imitation." Here is a profitable piece of work—about which there can be no two opinions—to be entered upon immediately. Let every teacher begin to seriously regard himself as a responsible educationist whose work ought, if properly done, to be of use to all other teachers for the purposes of comparison and guidance, and we shall get not only a great store of material for future reference, but we shall at the same time abolish slipshod and perfunctory teaching in the class-room. Let the Assistant Masters' Association identify itself with this educational research and it will then very soon become an important body to which all inquirers will appeal with confidence and respect.

THE Training of Teachers Joint Committee, over which the Rev. R. D. Swallow presides, was, as most of our readers know, called into existence by the Incorporated Association of Headmasters in 1897, and is representative of all the important interests of secondary education. The Committee now recommends the following conditions of admission to the register, which the Consultative Committee will shortly proceed to make, for those seeking admission on or after April 1st, 1905: "(1) That candidates for admission shall be graduates of a British University, or shall be in possession of a diploma equivalent to a pass degree; (2) That they shall hold a certificate, approved by the Consultative Committee, that they have followed a course of training, in the theory and practice of education, subsequent to their graduation; (3) That they shall give proof of two years' efficient service in a school approved for the purpose."

THE memorandum issued by the Joint Committee also recommends that those who are already teachers shall be admitted on easy terms. All headmasters and assistant-masters of, say, five years' standing in any one efficient school should find their place on a register as a matter of right. For men of less experience, or for those who have moved about from school to school, it should be necessary that the testimonial of a headmaster in whose school they have been teaching for not less than twelve months within the three years immediately preceding the date of application for a place on the register should be presented to the Consultative Committee, countersigned by at least two schoolmasters qualified by right, as aforesaid, for registration. Where a teacher has served for two years in a school, from the time of admission to a degree in Arts or Science by some University in Great Britain or Ireland, to the formation of the register, it should be sufficient that the application be endorsed by the headmaster of the school alone.

"WHAT has secondary education yet done for the practical farmer?" asked the Duke of Devonshire the other day at the annual prize distribution of the Countess of Warwick's secondary and technical school at Dunmow, Essex. The Lord President himself partially answered the question in the following words:—"I am afraid I cannot altogether acquit the farming class of some remissness, some negligence in this matter. I do not say that farmers are indifferent to the advantage of sending their children to the best secondary schools which they can find; but I do say that they have been too much in the habit of sending them to those schools, not for the purpose of making farmers or farmers' wives of them, but for the purpose of fitting them for some other occupation which has nothing whatever to do with farming. It is now recognised—late, but I hope not too late, though later than in other countries—that a sound system of secondary education, with technical education superadded, is the necessary condition of complete success in any industry. Our secondary schools in every part of the country have been, and are, in course of reorganisation with the object of supplying these wants, but still this truth, which has been recognised by every other industry, has found the farming classes indifferent."

ONE or two instances of such reorganisation as that to which the Duke of Devonshire referred are described at some length in the current number of the *Record of Technical and Secondary Education.* The Brewood Grammar School, with its newly organised agricultural side, is dealt with by Mr. Thomas Turner, the Director of Technical Instruction for Staffordshire. The Royal Grammar School, Chelmsford, is described by its headmaster, Mr. F. W. Rogers, who in 1885 began the reorganisation of the school. At Brewood Grammar School the course of study includes agriculture, which is made as practical as possible—both arable and pasture land being provided so that the theoretical instruction given in the class-room may be practically illustrated. Attention is paid to the manuring, cultivation and harvesting of farm crops, manurial experiments on grass land, feeding and management of dairy cows, the rearing and management of poultry, &c. Prominence is also given to the financial aspect of farm operations, while for instruction in the manual processes of agriculture a practical man is permanently employed by the school governors. Special classes in such subjects as hedge-laying are given at suitable times of the year by the County Council instructor. The changes at the Chelmsford school are all in the direction of modernising the curriculum and taking advantage of the excellent results which follow a judicious introduction of physical and chemical science into the time-table.

WE are glad to notice that Sir William Anson referred in his speech at the prize distribution of Chigwell School to what is a very real danger in our methods of teaching. It is possible to do too much for our pupils. If the help we give to the members of our classes means that they are doing less and less for themselves there is a great likelihood of our encouraging indolence. The boy who has so much prepared for him and done for him, and so many difficulties smoothed over, is not likely to trouble himself about learning things for himself, and the power to face his own difficulties and overcome them is never developed. The proper business of the school is to form habits of work and to train faculties rather than to impart information.

A SCHOOL of Commerce has been established in Bristol which works in conjunction with the Chamber of Commerce, and the members of the Chamber have from time to time during the last year given lectures to the students upon practical business subjects. Joint certificates in the names of the Merchant Venturers and of the Chamber of Commerce have been granted, and a number of merchants have agreed that, other things being equal, they will give the best posts in their offices to those who have carried out the programme. But there is one particular subject, we learn from a recent speech of the honorary examiner of commercial knowledge, which deserves more attention. Many students, he stated, have the most hazy ideas about Colonial questions, being quite unable to satisfactorily answer such questions as: What are the advantages of Colonies to a country? What is the great difference in the way Great Britain treats her Colonies and the way in which foreign countries treat theirs? What are the principal goods imported from the Colonies into Great Britain?

ALL interested in commercial education are anxiously waiting, says the *Chamber of Commerce Journal*, to learn what provision has been made by the Board of Education for the teaching of commercial subjects in the higher elementary schools which it proposes to establish. It is from these schools that by far the larger proportion of those entering the lower positions in commercial houses will be derived, and it behoves those interested in commerce to see that this important provision is not overlooked or underrated. Chambers of Commerce and School Boards throughout the country would do well to petition the Board of Education, urging that ample provision be made in these schools for commercial subjects.

MR. RICHARD LE GALLIENNE contributes a short poem on "Baby Stars" to the current number of *Child Life*. The first verse is as follows, and should prove very comforting to little maidens of the Kindergarten:

The souls of little girls who die
God sets up shining in the sky;
Though what becomes of little boys
I ask of Nurse and she replies,
That little boys are born without—
Just born to scuffle and to shout,
To play rough games, hit hard and die.
I'm glad I'm not a little boy.

The contributions to this bright little quarterly continue to be not only very interesting, but of just that helpful nature which acting Kindergarten teachers require.

THE general public will soon begin to understand the very unsatisfactory position of assistant-masters in secondary schools. The subject is becoming a familiar one in the newspapers, and has at last got into the reviews. Mr. W. H. D. Rouse contributes to *The Contemporary Review* for August an article on "Salaries in Secondary Schools" which is full of information sufficient to explain the discontent, bordering on despair, which characterises the ordinary assistant's estimate of his professional life. We gather from the article that the average salary of an assistant-master is below £120 a year! In eleven smaller schools the average salary is £52. One or two sentences of Mr. Rouse will serve to remind our readers what a very strong case for agitation the assistants in secondary schools have. "As to the smaller schools, the account of the career of a Cambridge B.A. of my acquaintance may be of interest. He began in Andover Grammar School at £15 resident, and, after several moves from one private school to another, where the pittance was somewhat increased, he attained, after nine years' experience, to the magnificent stipend of £140, non-resident. In the Grammar School of a country town, which for his sake I forbear to mention, a London B.A., whose life story is also before me, now receives £130, non-resident, after eighteen years' experience. The same pitiful story comes from scores of small country schools."

MR. ROUSE's article goes a long way towards answering the question raised in our Correspondence columns: What becomes of Assistant-masters? "Many men do leave the profession year by year. The more capable or ambitious get work in journalism, or scholarship, at the Bar, as secretaries, or solicitors, and so forth; others take the most astonishing ways of earning a living. A writer in *Longman's Magazine* (1898) traces the fate of sixty assistant-masters known to him. Four of these have schools of their own, and eight have become curates; amongst the others are a barrister, a solicitor, a gold digger, a professional tenor, a bookmaker [not literary], and a grower of tomatoes. Two are out of work and cannot find any; one poor old man shot himself; twenty-four only remain as they were, and fifteen have completely disappeared leaving no trace." Perhaps some light is thrown on the last class by a paragraph in the *Wigan Observer*, of April 21st, 1897: "Septimus Tebay, B.A., a skilful mathematician, and a poet of no mean order, formerly headmaster of Rivington Grammar School, died at the age of 77, in Bolton workhouse."

DIFFICULTIES about salaries are not the peculiar possession of teachers on this side of the Atlantic. The following sentences are from the *American Journal of Education*: "Capable servant girls in any of the large cities easily command 5 dollars per week with board and lodging, and are not required to lift a finger in the family laundry. Most of them live better, wear better clothing, and if so inclined have as much time for self-improvement and many more opportunities than does the country teacher. We do not recommend the teacher to become a household servant, but we should like to aid teachers in securing their natural rights. It's all very well to raise the standard of requirements for qualified teachers; but it is but fair to raise the compensation for their work at the same time, or proceed at once to place the profession of teaching on a missionary basis. We rave about the 'Little Red School-house.' We raise the Stars and Stripes above it, and wildly wave our hats and cheer this mighty bulwark of our homes and country. But enthusiasm and patriotism cool when confronted with dollars and cents, and we turn about and engage a commander of this stronghold for less money than we pay our hired man."

THE free Saturday-morning classes for teachers arranged by the Technical Education Board of the London County Council in previous winters are to be continued next session. At King's

College, Strand, W.C., a course of ten lectures on the teaching of mathematics will be given by Prof. Hudson, M.A., on alternate Saturdays, beginning on October 13th. Teachers desirous of attending this class should send in their names to Prof. Hudson, at 15, Altenburg Gardens, S.W. Also at King's College, there will be courses in Physics, under the direction of Prof. W. Grylls Adams, F.R.S., and a course in the Principles of Practical Physiology with lectures by Prof. Halliburton, F.R.S. Ten historical and critical lectures on the Pedagogy of John Locke will be delivered by Mr. J. W. Adamson on alternate Saturday mornings, commencing on October 13th. Miss Catherine A. Raisin, D.Sc., will give ten lectures, for Women teachers only, at Bedford College, from 10 to 11 on Saturday mornings, beginning October 6th.

THE inaugural address which Mr. Balfour delivered at the summer meeting of the Cambridge University Local Lectures on August 2nd has been published in pamphlet form by the Cambridge University Press. The first third of the present century engages Mr. Balfour's sympathies, but the middle third does not appeal to him; or, as he expresses it, "I feel no sentiment towards any of the intellectual dynasties which then held sway; that neither the thin lucidity of Mill nor the windy prophesyings of Carlyle, neither Comte nor yet Newman, were ever able to arouse in me the enthusiasm of a disciple; that I turn with pleasure from the Corn-Law squabbles to the great war, from Thackeray and Dickens to Scott and Miss Austen, even from Tennyson and Browning to Keats, Coleridge, Wordsworth and Shelley."

MESSRS. PHILIP HARRIS & CO., Ltd., have recently issued a very convenient little diary for science masters and others. It contains a useful calendar of all the public examinations in science and technology.

THE *School Board Chronicle* edition and manual of "The Code for Evening Schools, 1900-1901," has been published for the seventh time. It includes the Departmental circulars and forms, with other important and authoritative information.

THE Civil Service Commissioners announce that an open competitive examination for the situation of Draughtsman in the Hydrographical Department of the Admiralty will be held in London on September 25th, 1900. The number of situations at present vacant is one. The limits of age are 17 and 25. The examination will be in the following subjects, viz.:—Handwriting and Orthography; Arithmetic (including vulgar and decimal fractions); Geography; Practical Geometry; Map and Chart Projection; Hydrographical Plan-drawing; Translation from French, Spanish, or some other modern language. Candidates must pass to the satisfaction of the Commissioners in the first six subjects. They will be required to show what preliminary training or technical education they have undergone to qualify them for a situation of this nature, and they must satisfy the Commissioners that they possess the special qualifications necessary for the office. A fee of £5 will be required from each candidate attending the examination. First appointments are for one year on probation at an initial salary of £120. At the expiration of the first year, if retained, the salary to be £150, rising by annual increments of £10 to £250, and then by annual increments of £15 to a maximum of £400. This increase will be dependent on the efficient discharge of the duties. Application for admission to the examination must be made on or before September 6th to the Secretary, Civil Service Commission, on forms obtainable from him.

AN open competitive examination for the situation of assistant in the Nautical Almanac Office of the Admiralty will be held in London on October 2nd, 1900. The number of situations vacant is one. Application for admission to the competition must be made on the prescribed form on or before September 13th. These forms can be obtained from the Secretary, Civil Service Commission, S.W. The limits of age for this situation are 18 and 25. The examination will be in the following subjects, viz.:—Handwriting and Orthography; Arithmetic; Algebra (including quadratic equations); Trigonometry (including the logarithmic solution of plane and spherical triangles); Spherical and Practical Astronomy (including astronomical computations); French or German (translation into English). *One of these at the option of the candidate.* The first five subjects are obligatory. A fee of £1 will be required from every candidate attending the examination. Assistants in the Nautical Almanac Office receive salary commencing at £100 a year, and rising by annual increments of £10 to £250, and thence by annual increments of £10 to £300 a year. The increase is dependent upon the efficient discharge of the duties, and after £250 a year is reached any further increment will be dependent upon the issue by the superintendent of a certificate that the assistant is in every way worthy of such advancement, and is competent to undertake the more difficult calculations.

WELSH.

THE Committee of the Welsh County Schools Association, representing the headmasters and head mistresses of county schools throughout Wales, are of opinion that at least one educational expert, thoroughly versed in everything connected with Welsh education, should be added to the Consultative Committee.

AT the last meeting of the Committee it was stated during a discussion on a proposed pension scheme that a sum of from £4,000 to £5,000 a year would be necessary to allow the assistants, as well as the headmasters and head mistresses, to retire at about the age of sixty on half their salaries, and that this sum might be raised in three equal portions:—(1) From the contributions of the teachers, which in the case of the younger ones would not be more than about 2½ per cent.; (2) by contributions from each of the counties of Wales, which would not average more than about £100 per annum; and (3) by an annual grant from the Treasury on the same principle as the Treasury now contributes a certain amount to augment local funds in the endowment of each school.

THE volume of annual reports recently issued by the Central Welsh Board gives the latest official information respecting the county schools of Wales and Monmouthshire. It appears that the number of scholars is 7390 (3877 boys, 3513 girls), and that the number of schools inspected and examined last year numbered 93, that 76 of the schools are now established in permanent school buildings, while of the remaining eighteen seven have their buildings well on the way to completion. For the senior certificates offered by the Board 431 pupils entered, and of these 285 passed. For the junior certificates 927 entered and 690 passed.

IF the views of the teachers in the Cardiff Board Schools represented the opinions of the general body of teachers throughout Wales, the Welsh language would soon die out. Although Welsh was found to be taught in all, except six, of the forty-eight departments of the sixteen separate sets of schools where inquiries were instituted, there is reason to doubt, judging from the answers of the various head teachers, that the teaching is treated seriously in many of the schools. Either Welsh must be taken up in earnest and proper time given to it—in which case attention would have to be diverted from some other subject—or else the teaching of Welsh in primary schools will become a farce. How another difficulty, that, namely, of finding a sufficient number of properly-qualified teachers, is to be got over has yet to be discovered.

THE Central Welsh Board lay it down, in their volume of annual reports, that the linguistic training involved in the parallel study of two languages, so dissimilar as English and Welsh, must be of marked advantage to the pupil when he proceeds at a later stage to begin a foreign language. The Board expresses the doubt whether a Welsh-speaking pupil who, upon entering the school, begins to work at English, Latin, and French, would at the end of four years have as full a knowledge of Latin and French as if he had substituted Welsh for French or Latin, postponing one of the foreign languages for one or two years. It is further urged that many of the pupils in the Welsh county schools remain to live out their lives in their own land; and it may well be argued that for these a serious grammatical and literary training in their mother tongue will be at least as valuable an intellectual possession as a schoolboy knowledge of a dead or foreign language.

SCOTTISH.

THE Local Examinations Board of the University of Edinburgh, in view of the steady decline in the number of candidates, due to the operations of the Leaving Certificate Examinations, have resolved to discontinue these examinations. Candidates accordingly are informed that no further examinations will be held after June, 1901. All candidates who desire to complete their examinations or to add to their certificates must present themselves at that time. In the circumstances the decision is a wise one, as their continuance involved further and increasing drafts upon the Capital Fund. Besides, the object for which these examinations were instituted has been accomplished, viz., the setting up of a standard of efficiency for high schools, and the stimulation of effort by awarding certificates of definite value. The notable success of the examinations in attaining these aims long before the Government realised its duty in this connection should not be forgotten.

THE results of the University of St. Andrews L.L.A. Examination, 1900, which was held at numerous centres in Great Britain and Ireland, France, Germany, Belgium, Switzerland, Natal, Cape Colony, Italy, Malta, New South Wales and the United States of America, on May 29th-31st, have just been issued by the University. It appears that 980 candidates entered for examination at 84 centres this year, as compared with 959 at 77 centres in 1899, and 950 at 74 centres in 1898. 319 candidates entered this year for the first time, and, from the commencement of the scheme in 1877, 5,108 candidates in all have been entered for examination. 136 candidates have this year completed the requisite number of subjects, and will receive the L.L.A. diploma of the University. Taking a joint view of all the subjects in which candidates entered, 1,659 papers were written, passes were obtained in 995 instances, and honours in 218.

As anticipated in these notes last month, the Higher Education (Scotland) Bill has been withdrawn, owing to the strong opposition that was offered by the leading municipalities and county councils. The Leader of the House of Commons, in intimating its withdrawal, expressed the confident hope that on a second appearance it would have a happier fate and would find its way to the Statute Book. After the able manner in which Lord Balfour piloted the measure through the House of Lords, and the wise concessions he made in order to lessen the opposition in the House of Commons, its failure to receive even a second reading in that House must have come as a keen disappointment to him. Still it is an experience not altogether unforeseen, as at a public meeting in April he said that, notwithstanding the favourable reception accorded to the Bill as a whole, his opinion of the business capacity of the House of Commons did not warrant him in too confidently looking for its passage through that House this session. The *perfervidum ingenium* of a new Parliament should greatly increase this capacity and ensure the passing of the Bill next session.

THE results of the examinations for Leaving Certificates, held by the Scotch Education Department on June 20th-28th inclusive, have just been issued. 83 higher-class schools sent forward 5,307 candidates, and the number of papers taken was 21,086. The State-aided schools were represented by 348 schools, 11,468 candidates and 33,239 papers taken. The totals show an increase, compared with last year, of 349 candidates and 3,273 papers taken. In English 10,703 were presented and 5,145 passed; in Latin 2,690 presented and 1,555 passed; in Greek 888 presented and 615 passed; in French 7,010 presentations and 4,973 passes; in German 2,702 presented and 1,765 passed; in mathematics, including arithmetic, 14,653 were presented and 9,373 passed.

IRISH.

THE Bill to enable the Intermediate Board to use their funds for the purposes named in the Report of the Intermediate Education Commission passed through Parliament at the end of the session with some important alterations. The uses to which the Board can put their funds is not, as at first, left wholly undefined, but limited to the carrying out of the recommendations contained in the Report. The Rules drawn up must be laid before Parliament, and if objected to by either House shall become void and of no effect. Much objection was taken to the clause empowering the Board to spend some of their funds on superannuation allowances to the officers of the Board; but the clause was carried. This will lessen the sum available for the endowment of schools, which will also be diminished by the amount spent in paying inspectors. The most important change is that which remodels the constitution of the Board. It has hitherto consisted of seven men, eminent in their various professions, and busily employed in them, for the most part, but not practically acquainted with school education. This has always been felt to be an inadequate provision, and in his speech in the debate Mr. John Redmond suggested that a Consultative Committee to assist the Board should be appointed composed of educational experts. In the new Act it is provided that the Board shall now consist of twelve members, five, to be appointed by the Lord-Lieutenant, in addition to the present seven. If men versed in practical education be appointed, this change will greatly add to the efficiency of the Board, and the possibility of their complicated scheme being successfully carried out.

THE Summer Service Classes for Teachers held in the College of Science, Dublin, in July were this year again successful. The courses were in Physics, Chemistry and Botany. In the first 31 teachers attended; in Chemistry 28; and in Botany (a subject strangely neglected in Irish Schools), only 3. The attendance, it is stated, would have been much larger but for the classes in Manual Instruction held at the same time by the National Board which a very large number of teachers attended. It may be added that many more would attend if the courses were made less expensive. All teachers, except those in National Schools, or in classes under the Science and Art Department, had to pay £2 for each, and also were at the cost of travelling and living for three weeks in Dublin.

The Hermione Lectures in Art, instituted in Alexandra College, Dublin, in memory of the young Duchess of Leinster, who was much interested in the College, and also a lover of art, will be given this year by Mr. Roger Fry. The lectures take place each year in the beginning of November, and are six in number. Mr. Fry, who is a son of Judge Fry, is stated to have lectured very successfully at Cambridge, and he is the author of some books on art, including a study of Bellini. His subject will be the Early Italian Painters.

The results of the Pass and Honour Examinations in the Royal University were published at the end of July. They represent all the Honour examinations for the year, with the exception of the Honour degrees, and the examinations for Studentship and Scholarship, which are held in October. About 555 students matriculated, of whom about 150 were women. The Queen's Colleges of Belfast and Galway, and the Catholic University College, Dublin, with some of the larger schools and colleges, carry off nearly all the Honours; the great majority going to the first three colleges. The women-students, as usual, in proportion to their smaller numbers, win a very large number of distinctions. The Protestant colleges, Alexandra (Dublin), and Victoria (Belfast), and Victoria High School, Londonderry, are conspicuous, while the Catholic, St. Mary's College and Loretto Convent, take, perhaps, the most brilliant position.

CURRENT HISTORY.

The events of the last month seem to present themselves to us in the form of a problem. We feel that now, more than is usual, European civilisation is on its trial. In China, that which presents itself to the native mind as a compound of missionary, merchant and gunboat, is struggling for existence. And those of us who do but look on and have not to act, those of us who are still at school, *i.e.*, at leisure, cannot but think. We cannot but be what we are—the heirs of the ages—of St. Paul and countless Christian missionaries, of Whittington, Gresham, the Medici and many other merchant princes, of Schwartz the monk, and others who have advanced the art of war. And China will have none of us! Is it easy to answer the question, Why should she? Her ancestry is so different, yet to her eyes quite as respectable both in origin and results.

Turn to India. Out of the weltering chaos which followed the breakdown of the Mogul power in the eighteenth century, the natives of India were saved by England. Not that we were actuated by altruistic motives. We worked at first in frantic fear at what France might do, and afterwards for our own safety both internally and externally. As a result we stand to the inhabitants of that great peninsula and of the neighbouring lands as a great *deus ex machina.* We have given them the *Pax Britannica.* We have removed many of the effects of war and pestilence, and have created an artificial society of which as a whole we may be proud. But our task is not by any means accomplished. We have "increased the nation"; but, until communications have been so improved that the effects of famine shall be more mitigated than at present, we may well doubt if we have "increased the joy."

"Of making of books there is no end"—at least on the subject of South African politics at the present moment. Yet there is one more we should like to see. If it were possible for some Kaffir or Mashona to tell the secrets of his heart! "On Europeans and their Ways," by Khama, for example, ought to be "read, marked, learned and inwardly digested" by all our South African politicians. In that country we have two European ideals struggling for mastery: the sixteenth-century, theocratic, Dutch Huguenot conception of the world and its conquest, and on the other hand the quite modern gold-seeking Englishman, with his ideas as to justice, "self government" and treatment of the natives. This present war will certainly not settle the question. What will be the ultimate result of the two races dwelling under the same government is a question that even the next century may not solve.

And, finally, to come home. What is the meaning of Anarchism and its mad crimes? Some of us are old enough to remember Garibaldi and the enthusiasm for "United Italy." And at least we *know* of the "nationality" movement which, under the name of "freedom," has created Belgium and Greece, to say nothing of Germany and Russia. But this generation is paying the cost. The "nations" found no way to assert their existence but by arms. Of all armies, a national force, an armed citizenship, was thought to be the least offensive, the least dangerous. And so, with the best of motives, Europe became an armed camp, and "conscription" is the order of the day. When everyone is armed, everyone is in danger from his neighbours. Therefore the arming must continue. And the vicious circle must apparently be followed *ad infinitum.* Hence results taxation, not only of money but of men. This taxation crushes the industrial machine and brings about extreme distress to the lowest classes. Somewhere, at last, the agony *must* bring madness.

THE WORK OF THE LONDON SCHOOL BOARD.[1]

The work accomplished by the School Board for London during the thirty years of its existence has so completely altered the educational condition of the metropolis, and has so profoundly influenced English elementary education as a whole, that it was only proper a record of it should be included in the English Educational Exhibit at the Paris Exposition. The volume before us was prepared by the direction of Lord Reay, the Chairman of the London School Board. It contains a description of education in London prior to 1870, an explanation of the policy of the first School Board, and a full account of all the directions in which elementary education has been developed and extended by subsequent Boards. The special subjects of instruction, which constitute a conspicuous characteristic of the curriculum of a typical London board school, are dealt with by the instructors and organisers who have charge of the work. We are sure the hope expressed in his preface by the Chairman of the Board, that the volume may prove useful to foreign educationists and to the friends of education at home, will be realised, for it would be difficult to imagine a more judicious and impartial *résumé* of a complicated and highly successful organisation.

The magnitude of the work of the London School Board can be realised to some extent by the aid of a few facts from the historical introduction to this book. "The child population of London standing in need of elementary education is larger than the total population of any European city, except Paris, Berlin, St. Petersburg, Moscow, and Vienna, and is more than double that of Bristol, Dresden, or Prague. The total sum raised within the administrative area of London for municipal purposes (including education) is equal to the total revenue of Saxony, or Portugal, or Chili; while the sum expended in London upon elementary education alone is equal to the total national expenditure of Denmark, Norway, or Switzerland."

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[1] "The Work of the London School Board." By Thomas A. Spalding, LL.B., assisted by Thomas S. A. Canney, B.A., with contributions by Members of the Staff. A Preface by Lord Reay, Chairman of the Board. xii.+476 pp. (P. S. King & Son.) 5s.

Some idea of the progress made during the last thirty years is obtained from the simple statement: "London, in 1870, with all its concentrated wealth, was more in arrear in the matter of school provision than any other part of the kingdom. It was estimated that there were no less than 176,000 children within the metropolitan area for whom, if they had desired to go to school, no efficient school places were provided."

The first School Board for London, which met for the first time in December, 1870, had to decide questions of policy which affected not only London education, but that throughout the country. The gigantic problem was attacked in six main sections—statistical, school buildings, school management, compulsion, industrial schools, and finance. These branches of the enquiry form the subjects of the chapters of the second part of the volume, called "Foundations." Of these chapters, perhaps that on School Management—which deals with the subject in two parts, before 1870 and after—will prove of most value and interest to teachers.

The private adventure schools, including Dames' schools, before 1870 must have been weird institutions. "In the census of 1851, more than 700 heads of such establishments authenticated their returns with their mark in place of signature. Many were unable to write an intelligent answer to a simple question. The following is an exact transcript of a letter addressed to one of the Assistant (Newcastle) Commissioners:—'3rd March, 1859. Sir, I regret that I am not able to attend to all the rules lade down in thee in closed, as my school is of to humbel a cast to meat eyes (of thee publick gaze) at thee same time Sir I shall be moust appay to refur you to my Children's Parents, as kindly favord me with thir children for some years. Any further information that you require Sir, I shall bee moust appey to give. Pardone defects; I remain your most humbel servant.'

"One, on being asked as to the terms on which she gave instruction, replied:—'Not understanding the questing, I answer thus:—with a view of reading the Bible.' We have the authority of the late Lord Shaftesbury for the statement that one of these poor creatures, being asked if she gave moral instruction to her scholars, replied, 'No, I can't afford it at 3d. a week.' The whole case was summed up by another, who, answering a question as to the amount of remuneration she received, and the amount of knowledge she imparted, said: 'It's little they pays us, and its little we teaches them.'"

These examples are but specimens; the interested reader will find many more in the volume under notice. We have given these instances of the deplorable condition, before 1870, of teachers and teaching in many schools professing to educate London children to indicate roughly the task with which the first London School Board had to grapple. Of the success which attended their efforts the second part of the chapter on "School Management" provides abundant evidence. In February, 1871, the Board appointed a committee, of which the late Professor Huxley was chairman, to consider the scheme of education to be adopted in public elementary schools. It is unnecessary to reprint the recommendations of this committee. Everybody familiar with the routine of London board schools will know the general character of the excellent work which is done. Teachers who are engaged in secondary schools, and who only know by hearsay what can be accomplished by young children in elementary schools, should endeavour to obtain the opportunity of seeing a London school at work, or, indeed, a school in connection with the School Board of any large town. It will probably prove a revelation. The interest shown, the intelligence manifested, the excellence of the work accomplished, are all calculated to surprise the teacher who knows only the acquirements of the pupils in more favoured secondary schools.

In this connection the account which Mr. S. E. Bray has contributed to the third part of the volume—that concerned with curriculum and school life—is interesting. Mr. Bray gives an admirable description of the day's work in an ordinary London board school. He tells of the children, what they learn and how they are arranged; of the teachers, what their qualifications are and how they go about their work; of the building and its furniture, and of those extra duties the London board-school teacher performs so cheerfully, which add so much brightness to the lives of the children under their charge.

Take, for instance, the help the teachers give out of school towards the physical education of the children:—"A very pleasing feature . . . . is the keen interest shown by a large number of teachers, especially of boys' departments, in the encouragement of outdoor games amongst their pupils. It is, indeed, remarkable in some schools to see with what ingenuity such games as football, rounders, cricket, &c., are carried out, in spite of the fact that in many instances the playgrounds are of limited area, and the ground in every case asphalted. A visit to the parks, open spaces and commons in and around London, on any Saturday morning throughout the year, will convince the most casual observer that every effort is made by the teachers to foster a love of healthy outdoor sports and athletic games amongst their pupils" (p. 241).

The important work the London School Board is doing in the direction of training teachers is discussed in two papers in Part III. of the volume. Mr. J. Nickal describes the pupil teachers' school. Since 1898 no pupil teacher teaches for more than half of the school day, the other part of the day he or she is a pupil at one of the numerous central schools. These schools are all of the same general pattern, and Mr. Nickal describes the Hackney establishment as typical of the whole. Mr. W. T. Goode explains a more recent development of the Board's work in training teachers. Not every pupil teacher who passes the Queen's Scholarship examination is able to enter a training college; there is not accommodation enough. It has been customary for such teachers to obtain employment as what is called "assistant teachers," and to work privately for the teacher's certificate. Since 1898 the London School Board has arranged a school for such Queen's scholars who are employed by them as assistant teachers. These teachers spend two-and-a-half days in teaching and two-and-a-half days studying under a special staff of teachers for the certificate examination.

But the volume contains a great deal more than it is possible to refer to in a single notice. The chapters on science, drawing, singing, manual training, cookery, domestic economy, needlework, physical education, are each written by an expert responsible to the Board for the work in his subject in the schools. We strongly advise country teachers responsible for these subjects to study the accounts of what is being done in London.

Among the hundreds of thousands of children in London a certain percentage are, of course, abnormal, and special provision has had to be made for them. Miss Greene describes the schools for the blind, Mr. Nelson those for the deaf, and Mrs. Burgwin explains the provision made for physically and mentally defective children. The concluding chapter very appropriately deals with the evening continuation schools in connection with the Board. Mr. Bray shows what progress has been made since 1882, describes the objects of the schools, the curriculum and the means taken to maintain the interest in intellectual work of young people who have started the serious business of life.

The whole volume is instructive and intensely interesting, and we hope it will be widely studied.

A NEW HISTORY OF GREECE.[1]

The facts that will, perhaps, first strike the reader of this new History of Greece are its clear conciseness and its sense of proportion. With regard to the former of these points, it is, no doubt, much easier for a writer with Mr. Bury's wide knowledge of his subject and his accurate scholarship to allow such a history to range into several volumes; but there cannot be any doubt, as he says himself, that "compression into a single volume often produces a more useful book," provided, of course, that the compression is carried out with skill and discernment. The author's aim throughout is to interest the ordinary reader in Greek history, and not merely to produce a school or university text-book, although this is not lost sight of. The result is that we have a work more readable and interesting than the ordinary run of histories.

Alexander.

With regard to the other point mentioned, the sense of proportion, we may observe that no one period occupies an undue share of the work, which appears to us to be exceedingly well balanced. It is true that a considerable amount of space is allotted to the century B.C. 500-400, but this was a pre-eminently important time for Greece. Something, too, must be allowed to the author's great admiration for Thucydides, of whom he speaks as "the first and greatest of critical historians." "To read the book," he says, "which Thucydides, the son of Olorus, has bequeathed to posterity is in itself a liberal education, a lesson in politics and history which is, as he aimed to make it, 'a possession for ever.'" For ourselves, we are disposed to agree with his estimate, but it is probable that to certain people it will appear somewhat exaggerated.

A portion of the book that seems to be especially well worked out is that which relates to the Athenian empire under Pericles, whose patriotic imperialism is discussed with great skill. Full justice, however, is done to the lofty aims of the great statesman whose great and absorbing idea was "to make Athens the Queen of Hellas, to spread her sway on the mainland as well as beyond the seas," and so to bring about "the union of all the Greeks, an union tied together by the power of Athens, but having a natural support in a common religion, common traditions, common laws and a common language." Very favourably does Pericles compare as a patriot with Themistocles and Alcibiades, who were, perhaps, the greatest of his countrymen, and one of the best traits of his character, his humanity, is especially brought out by Mr. Bury in his account of him. "No Athenian ever put on black for any act of mine."

The interest of the history is well kept up to the last. This will, we think, be allowed by all who read the chapter on "The Syracusan Empire and the Struggle with Carthage" and the account of Alexander the Great.

At the conclusion of the book there is a very full and useful chronological table, followed by a long series of Notes and References, which of itself shows the great pains taken by the author to ensure accuracy and originality.

One great point to be noticed is that there are no chapters devoted exclusively to art, literature, philosophy or religion, as is so often the case. These, as Mr. Bury says in his preface, should only be touched upon when they directly illustrate, or come into some specially intimate connection with, the political history. This adds greatly to the value of the work, as not only are the long chapters on these subjects, which are found in so many comparatively short histories, entirely omitted, but the descriptions of contemporary art and architecture, &c., which are particularly well done, come naturally in the course of the work, and so are much less liable to be skipped by readers.

Pericles.

The maps and the plans of towns, battles and sieges, can hardly be improved upon: they are at once full and very clear.

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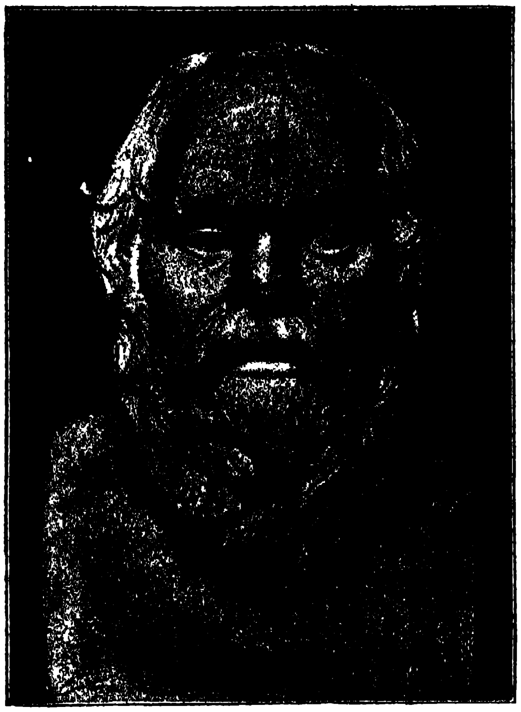
[1] "A History of Greece to the Death of Alexander the Great." By J. B. Bury, M.A., Hon. Litt.D. Durham, Hon. LL.D. Edinburgh, Corresponding Member of the Imperial Academy of Sciences, St. Petersburg, Fellow of Trinity College and Regius Professor of Greek in the University of Dublin With maps and plans. (Macmillan.) 8s. 6d.

The illustrations, too, are chosen with great judgment. A great point is made of the coins of the various states, which are so valuable to the historian, and the figures of statuary have been selected with great care. We reproduce three of the portraits taken from busts. That of Alexander the Great is, perhaps, somewhat conventional, and the copy of the portrait of Pericles by Cresilas represents him as the philosopher rather than as the statesman and warrior; but the head of Socrates seems to show us the man exactly as he was, in the act, it would appear, of proving to one of his disgusted compatriots that he thought he knew a good deal, but in reality knew nothing.



Socrates.

In conclusion, we would only say that the moderate price at which the book is published will probably enable it to be widely adopted, as it deserves to be, as a text book, and will also place it easily within reach of the ordinary student, whose knowledge of Greek History cannot fail to be largely increased by a careful perusal of this excellent work, which is a distinct advance upon the smaller histories at present available.

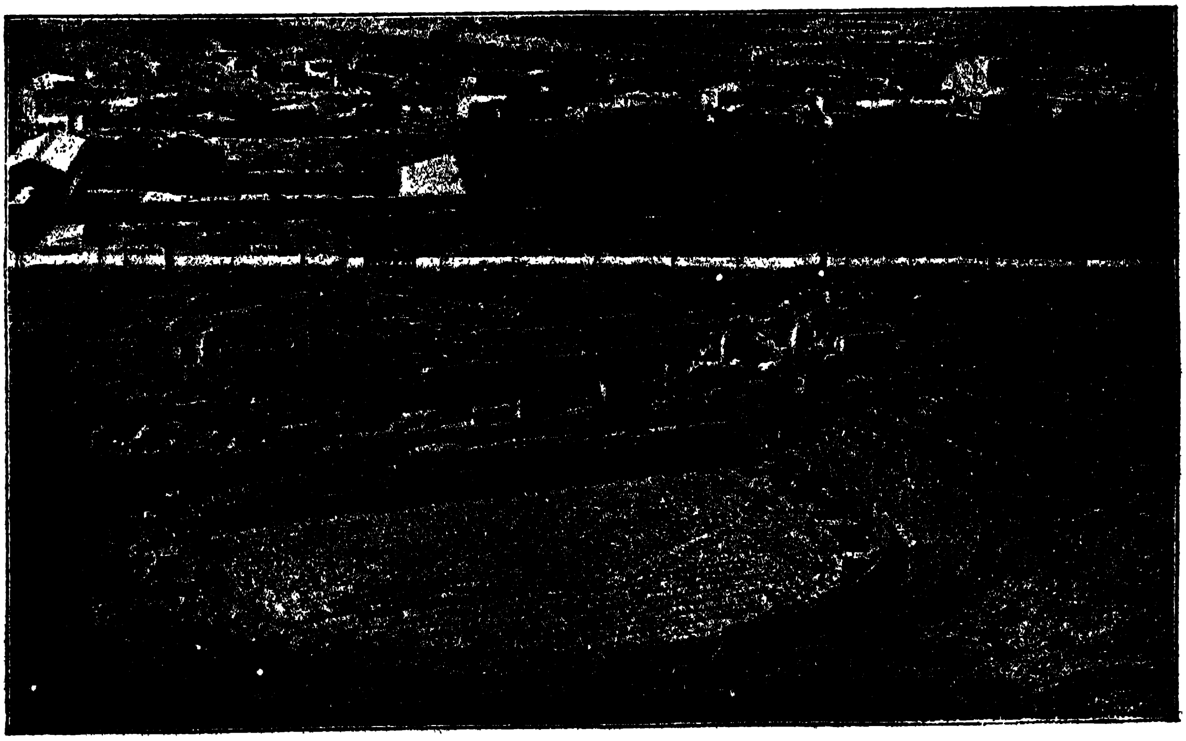
W. W. F.

RECENT SCHOOL BOOKS.

Classics.

Caesar: De Bello Civili. Book III. By A. G. Peskett, M.A. xxiv. + 184 pp. (Cambridge University Press.) 2*s.* 6*d.*—The "Civil War" has not yet suffered, like the "Gallic War," from over-editing for English schools. This edition, marked alike by genuine scholarship and simplicity, ought to hold the field for all purposes for which the book may be required. We find here a very useful historical introduction, maps, notes which supply all necessary comments in the best style, the correct orthography, a conspectus of various readings, and an index—in short, everything which should be found in an edition for the use and stimulus of an intelligent mind.

The Antigone of Sophocles. By G. H. Wells, M.A. xl. +134 pp. (Bell.) 3*s.* 6*d.*—This book belongs to Messrs. Bell's "Intermediate Series of Classical Authors," the general get-up of which leaves nothing to be desired. The present volume contains an introduction on Greek drama, and the Greek theatre illustrated by a plan of the theatre of Epidaurus, and an excellent copy of a photograph of that of Dionysus at Athens, here reproduced. The dramatist's life and methods



The Theatre of Dionysus at Athens. (From G. H. Wells's "Antigone of Sophocles" (Bell).

are dealt with, and then we have ccount of the historical setting of the particular play, followed by character sketches of the *personæ*. In the notes the names of Bellermann and Jebb naturally occur with great frequency, and the editor has exercised care and discrimination in giving sufficient elucidation to all points, as far as we have tested them, which need comment. The text is illustrated by very good reproductions of ancient examples.

The Letters of Cicero. Vol. III. Translated by E. S. Shuckburgh, M.A. xxvii. + 381 pp. (Bell.) 5s.—This volume contains Cicero's correspondence from the beginning of B.C. 48 to February 44. The letters are interesting as containing the writer's real views expressed in private correspondence with his friends, and a comparison between their sentiments and those contained in his public speeches is often instructive, and, as Mr. Shuckburgh points out, they are frequently irreconcilable. The translator continues his task in this instalment with the accuracy and justice to the original which we recognise in the former volumes, and in his "Polybius." When the work is complete it will be a very good example of the new "Bohn's Library."

Lucian: Charon and Timon. By T. R. Mills, M.A. 120 pp. (Clive.) 3s. 6d. These two works of the sophist and "inimitable" satirist of Samosata are set for London Matriculation next year. Mr. Mills has produced an edition which will be found very serviceable by all intending candidates. The introduction contains a compact summary of Lucian's life, works and opinions, with analysis of the subject matter of each dialogue in the book. The notes are of that full and minute description which is such a feature of the "Tutorial Series." Usages of language characteristic of late Greek are commented on. An index, other than that of proper names, would be of advantage to the student of language and style.

Edited Books.

Old Mortality. Edited by J. A. Nicklin. 532 pp. (Pitt Press.) 2s. 6d.—This is a very good attempt to edit Scott's celebrated novel as a school-book. The hand of a scholar is traceable everywhere. The introduction is especially admirable; not too long, yet sufficiently clear. The notes and glossary will be found extremely serviceable. The more of Scott's novels we have in this form the better for literary taste; they supply the right kind of material for a real appreciation of Scott's genius, and ought to assist in clearing the field of numerous inefficient attempts to do this very useful kind of work.

Johnson's Lives of Milton and Addison. Edited by J. W. Duff. 209 pp. (Blackwood.) 2s. 6d.—As the editor remarks, the charm of Johnson never seems to die, and this little volume will do much to keep it alive in the unfamiliar quarters of the school-room. In every respect it is an admirable edition, and the Introduction paints a picture of Johnson the man which will especially appeal to young students. The notes are condensed, but their number is necessarily great; they are, however, clear and pointed. The table of selected works of reference is a most valuable feature. Altogether a very noteworthy edition.

The Princess. A play in two acts. By L. Rossi. 52 pp. (Dent.) 1s.—The name of the publishers of this volume is a guarantee for every kind of mechanical and artistic elegance in presentation. We wish we could say the same for the editor and his work. As a deformed version of a great poem, it is possible this play may be useful in schools; but it is, we fear, labour thrown away to try to convince a certain sort of literary man that there are some things still left in this world, since the days of Mr. Bowdler, which it is almost sacrilege to trifle with even for educational purposes.

Text-book for Holy Communion, Baptism and Confirmation. By Rev. S. Buss. 188 pp. (Rivingtons.) 1s.—This is a useful little manual from a teacher's point of view, although it is written to support the favourite historical theory of the High Church party concerning the historical continuity of Catholicism in the Church of England. Those whose prejudices run in the direction of this hypothesis will be able to find their view ably supported in these pages. The inclusion of a number of examination papers will be of material assistance to teachers.

Shakespeare's Henry V. (Swan Edition.) Edited by D. Fergusson. 161 pp. (Longmans.) 1s.—Of the making of editions of Shakespeare there is just now no end, and the "Swan edition" for cheapness, clearness and good style will command much attention. Mr. Fergusson's introduction to "Henry V." is exceedingly well done, and will help any average student to a most intelligent comprehension of the play. The respective sections on Elizabethan language and Shakespeare's grammar and versification are most valuable on account of the way in which all that is essential for boys and girls is lucidly and succinctly presented.

Shakespeare's House.

The notes are things for future editors of school-books to take copy from. Ten excellent, full-page illustrations by Mr. R. Wheelwright add to the attractiveness of this volume, which also includes numerous wood-cuts of lesser size, one of which is here reproduced by the courtesy of the publishers.

The Story of the West Country. 253 pp. (Edward Arnold.) 1s. 6d.—This addition to Mr. Edward Arnold's series of Local Readers is so good that it is a pity its authorship is veiled in anonymity. It is well furnished with maps and illustrations, and the matter is most judiciously arranged. As a reading book it ought to be widely used, and, as its title shows, it is specially adapted to appeal to those who hail from or live in "The West Countree." The inclusion of Mr. Walter Thornbury's poem of "Longleat" is a unique and pleasing feature.

The Talisman. Edited by W. Melven. 342 pp. 1s. 6d. Also *Quentin Durward.* Edited by H. W. Ord. 466 pp. (A. and C. Black.) 1s. 6d.—As reading books, these volumes may serve the double purpose of popularising Scott and improving the taste of pupils for really good work in literature.

If they do so, however, it is hardly the merit of the edition itself; for, as we have noted in previous cases of volumes in this series, the respective editors seem to have received instructions to reduce their labours to a minimum. The introductions are by no means worthy of the subject, and the notes are few and far between. This, perhaps, the editors consider unavoidable; but more time and care—and space—expended on introductory matter need not be wholly thrown away unless the editor chooses.

Nellie's Memories. By Rosa N. Carey. 229 pp. (Macmillan.) 1s. 6d.—This is an abridgment of Miss Carey's well-known story, exceedingly well done. There is no attempt at editing, but considerable literary tact and judgment have gone to the selection of just those portions of the larger work which will make an agreeable and useful school-reader.

Mathematics.

The Student's Dynamics. By G. M. Minchin, M.A., F.R.S. xii.+258 pp. (Bell.) 3s. 6d.—This book is distinguished by the unusual number and excellence of its numerical examples, upon the importance of which the author very properly lays stress. Among them will be found some of Professor Greenhill's beautiful problems, which are certainly among the best illustrations of dynamical principles that have ever been devised. Professor Minchin's treatise deserves a favourable reception, and its general excellence justifies a rather minute criticism of particular points. The question of relative motion should be discussed at an earlier stage; a separate treatment of the parallelogram of accelerations is desirable; in the statement of the experimental law of elastic recoil the signs of the velocities should be indicated, as this is a point which often troubles beginners; and the discussion of the laws of motion might, perhaps, be made a little more logical, even in an elementary book. On p. 2 Professor Minchin defines equal masses as those which have equal weight, and afterwards defines force by the acceleration it produces on a mass. This, of course, is a vicious circle, pure and simple. But these details can be easily corrected by a competent teacher, and will probably be amended by the author in a revised edition. On the whole, there can be no doubt that this will prove a very useful class-book.

Science and Technology.

Introduction to Zoology. By Charles B. Davenport, Ph.D., and Gertrude C. Davenport, B.S. xii.+412 pp. (New York: The Macmillan Company.) 6s.—This is really an excellent guide to the study of animals, especially for pupils in secondary schools. We know of no book published in this country which exactly covers the same ground; nor one which deals with the subject in the same broad and interesting manner. Now that attention is being earnestly directed to nature study, particularly in rural schools, this volume should be very useful in showing teachers what is being done in America. The course outlined in the book is in no sense an introduction to comparative anatomy; it more nearly approaches the old subject of natural history. The illustrations are really beautiful; an attempt has been successfully made to give a lifelike figure of a representative of the chief families mentioned in the text. The outline of laboratory work in zoology at the end of the book will be particularly useful, and we strongly recommend all teachers responsible for biological work in schools, of whatever grade, to give this volume a careful examination.

Physiology for the Laboratory. By Bertha M. Brown, S.B. viii.+167 pp. (Boston, U.S.A.: Ginn & Co. London: E. Arnold.) 3s. 6d.—Miss Brown has arranged a good working set of experiments in elementary physiology. As a rule, the apparatus required is of quite a simple kind, and a large number of the experiments can be done without a compound microscope. We are afraid that public opinion in this country would make it unwise to allow boys and girls to perform some of the experiments. The exercise on page 27, which is meant to show the way in which muscles act, is a case in point. It is quite a matter for discussion whether physiology is in any circumstances a suitable school subject. We are disposed to agree with the Master of Downing College that other school subjects more satisfactorily train the faculties exercised by a study of physiological questions. Where the subject is taken practically, it would be difficult to find a more satisfactory and trustworthy guide than Miss Brown.

The Human Frame and the Laws of Health. By Drs. Rebmann and Seiler. Translated from the German by F. W. Keeble, M.A. ii.+148 pp. (J. M. Dent & Co.) 1s.—The first hundred pages of this recent addition to the tastefully-produced Temple Primers are taken up by an elementary account of the anatomy and physiology of the human body. The second section, which completes the volume, is concerned with the laws of health. The first part contains many more technical terms than the ordinary person will care about; many more, indeed, than are really necessary to convey a trustworthy and helpful idea of the parts of the body and their uses. The pages on hygiene give the impression that it is a simple matter to become healthy and remain so. It would be if it were half as easy as it is to read these laws of health. The primer will, we should think, soon become popular.

First Stage Botany. By Alfred J. Ewart, D.Sc. viii.+252 pp. (W. B. Clive.) 2s.—From the number of elementary books on botany which have recently been published, it would certainly appear that this subject is increasing in popularity. The present volume is intended for students in classes in connection with the Board of Education, South Kensington, and it should serve its purpose very well. The illustrations are numerous and good; many of these have already become familiar in the pages of Lowson's "Botany," though a considerable number have been specially drawn for the little book before us. Many teachers will think the text is not sufficiently divided into paragraphs, and that an unnecessary appearance of "dryness" is given to the pages. Like most of the volumes in the series to which it belongs, Dr. Ewart's book will get the careful reader through his examination all right.

Inorganic Chemistry. By W. A. Shenstone, F.R.S. viii.+506 pp. (Arnold.) 4s. 6d.—This book is written in a somewhat different style from most text-books upon the subject, and it will commend itself more especially to teachers who have to provide for students of varied capacities and attainments. The numbered sections will permit more than one course to be drawn up upon the basis of the book. Moreover, the advanced reading is distinctly marked off with marginal lines. The numerous footnotes contain some very useful hints, careful attention to which will save much time in performing experiments. The section upon carbon and its compounds forms a concisely written introduction to organic chemistry. We notice one or two points needing correction. On p. 26, the third line from bottom reads: "One cc. of water weighs 0·994 gram (the weight at 4° is 10 grams)." The pressure-temperature exercise on p. 78 might be arranged differently, as the numerical result comes out the same value as the original volume before correction. These, however, are but minor matters, and the volume as a whole is an authoritative text-book from which students can obtain a sound knowledge of chemistry.

SENIOR CAMBRIDGE LOCAL EXAMINATION, DECEMBER, 1900.

Revision Test Papers.—No. 1.

THE following test papers cover the first half of the syllabuses, in the subjects selected for treatment, of the Senior Cambridge Local Examination of December next. The subjects in which questions are given are those offered by the largest number of candidates.

A second series of tests dealing with the remaining parts of the syllabusus will be published in our November issue.

Copies of the papers in any of the subjects can be obtained in a form suitable for distribution in class. The reprinted papers are sold in packets of twenty-five at a cost of 6d. net for each subject. The papers may be ordered through a bookseller, or they may be obtained (post free) from the Editors of THE SCHOOL WORLD, but in the latter case all orders *must be prepaid.*

Teachers who require other test papers are recommended to examine the Oxford Local test-papers published in the first five numbers of this year. Copies of most of these papers can still be obtained.

Arithmetic.

A.

(1) In a certain division sum the remainder is 1616, the divisor is twice the remainder, and the quotient is three times the remainder; find the dividend.

(2) Simplify the expressions:—

$$\text{(i.)}\ \frac{3\frac{1}{7}+2\frac{1}{21}-1\frac{1}{35}}{3\frac{10}{21}-\frac{4}{7}+\dfrac{2}{4\frac{2}{7}}};\quad \text{(ii.)}\ \frac{1\frac{11}{10}\times 2\frac{1}{3}\times 4\frac{6}{7}}{3\frac{1}{7}\div\left(\dfrac{1}{3\frac{1}{3}}+\dfrac{1}{5\frac{1}{3}}\right)}.$$

(3) Divide ·04726865 by 15·73, and find the continued product of

$$5\cdot\dot{1}4285\dot{7}\times 2\cdot\dot{7}\dot{5}\times 1\cdot\dot{6}9230\dot{7}.$$

(4) Find the width of a courtyard $10\frac{1}{2}$ metres long, which requires to pave it 350 paving stones, each 45 centimetres wide by 50 centimetres long; and what will be the total cost to the nearest centime, of paving, at 40 francs 25 centimes per square metre?

(5) Find the interest on £380 4s. 2d. for 28 days at $3\frac{1}{2}$ per cent. per annum.

(6) A bankrupt's liabilities amount to £7,380; after paying expenses and bankruptcy fees, amounting in all to 10 per cent. on his whole estate, he can then pay 12s. 6d. in the £; how much did he pay for expenses and fees?

B.

(1) Find to the nearest penny the compound interest on £7,150 for 3 years at $2\frac{1}{2}$ per cent. per annum.

For what sum of money will the difference between the compound and simple interest be £1 17s. $9\frac{3}{4}$d., the time and rate of interest remaining the same?

(2) A milkman buys milk at 3d. a quart; with what quantity of water must he dilute it to be able to sell it at 4d. per quart and gain 40 per cent. on his outlay?

What will be his total profit per cent. if he finds at the end of his rounds he has 12 per cent. unused, and of the rest 5 per cent. was wasted by spilling?

(3) A sum of money was left to a number of charitable institutions; the first received one-third as much again as the second, the third one-half of what the first and the second received together, and the fourth one-half of what the second and the third received together; the remainder was divided into five bequests, each of which amounted to one-sixteenth of what the first institution received; if the difference between the amounts left to the second and third institutions amounted to £500, find the original sum of money and the amounts left to each institution.

(4) A man invests equal sums of money in $2\frac{3}{4}$ per cent. Consols at $101\frac{3}{4}$ and 8 per cent. railway stock at 168. He sells out when the Consols have fallen to $100\frac{3}{4}$ and the railway stock has risen to 176, and re-invests in a 4 per cent. debenture stock. He finds that his income has been unaltered by the transaction; what is the price of the debenture stock?

(5) It takes 3 men and 2 boys four hours to dig a trench 5 yards long, 3 feet wide and 6 feet deep, or 2 men and 3 boys eight hours to dig a trench 10 yards long, 4 feet wide and 4 feet deep; how long will it take 6 men and 5 boys to dig a trench 20 yards long, 4 feet wide, and 9 feet deep?

Answers.

A. (1) 15670352. (2) (i.) $1\frac{1}{4}$; (ii.) $2\frac{5}{11}$. (3) ·003005; 24.
(4) $7\frac{1}{2}$ metres; 3,169 fr. 69 c. (5) £1 0s. 5d.
(6) £512 10s.

B. (1) £549 15s. 4d.; £1,000. (2) 20 : 1; 17·04%.
(3) £15,000; £4,000, £3,000, £3,500, £3,250, and five £250. (4) 109. (5) 15 hours.

St. Luke.

(1) State what you know about the objects of the author in writing this gospel. When was it produced, and for whom? What remarks do you make about its literary style?

(2) Give a careful account of St. Luke, discriminating between known facts and traditions about him.

(3) What are the characteristics of the New Dispensation as revealed in the Canticles of St. Luke's gospel?

(4) In what respects is St. Luke's gospel "the gospel of tolerance?"

(5) Relate in your own words the last miracle peculiar to this gospel. Say what it was designed to teach.

(6) What part was taken by women in the life of Jesus? Give as many instances as you can.

(7) Who were Lysanias, Barabbas, Archelaus, Caiaphas and the Itureans? In what connections are they mentioned in this gospel?

(8) Give a short epitome of the ministry in Galilee.

(9) Give the context, and explain:—

(1) *τὸν καλούμενον ζηλωτήν*
(2) *ὅς ἐγενετο προδότης*
(3) *λῃσταις περιπεσεν.*

(10) Translate, and explain any points you think necessary:—

Καὶ ἐγένετο ἐν τῷ διαχωρίζεσθαι αὐτοὺς ἀπ' αὐτοῦ εἶπεν ὁ Πέτρος πρὸς τὸν Ἰησοῦν, Ἐπιστάτα, καλὸν ἐστιν ἡμὰς ὧδε εἶναι, καὶ ποιήσωμεν σκηνὰς τρεῖς, μίαν σοὶ καὶ μιαν Μωσεῖ καὶ μίαν Ἠλίᾳ, μὴ εἰδὼς ὃ λέγει· ταῦτα δὲ αὐτοῦ λέγοντος ἐγένετο νεφέλη καὶ ἐπεσκιασεν αὐτούς· ἐφοβὴθησαν δὲ ἐν τῳ εἰσελθεῖν αὐτοὺς εἰς τὴν νεφέλην· καὶ φωνὴ ἐγένετο ἐκ τῆς νεφέλης λέγουσα, Οὗτός ἐστιν ὁ υἱός μου ὁ ἀγαπητός· αὐτοῦ ἀκούετε.

English Grammar and Composition.

PARSING, ANALYSIS, AND HISTORY OF THE LANGUAGE.

(1) Analyse in tabular form:

If sovereignty *has been relieved* by our modern institutions of *some* of its burdens, it still, I believe, remains *true* that there has been *no* period of the world's history at which successors to the monarchy could more efficaciously contribute to the *stability* of a great historic system, *dependent even more* upon love *than* upon strength, by devotion to their duties and by a bright example to their country.

(2) Parse fully the words in italics in Question 1.

(3) Define an adverb. Show in what ways they are, or have been formed.

(4) Indicate some of the most important facts in the history of the English Alphabet.

(5) Annotate these words—*bridegroom, eaves, its, aloft, eleven, seamstress, would, farthest.*

(6) What is the origin of our Relative Pronouns? Distinguish between the uses of (i.) *who* and *that*; (ii.) *what* and *which.*

(7) Define and illustrate—doublet, hybrid, secondary derivative.

What are the chief methods of forming compound nouns?

(8) For English Essay. (Time allowed, three-quarters of an hour.)

(1) "Trade follows the Flag."
(2) The Freedom of the Press.
(3) Old London.
(4) The House of Lords.

English History.

(1509-1603.)

Five *questions only to be attempted.*

(1) Give an account of the various Dukes of Norfolk who figured in the politics of this period. Mention any other members of the Howard family who came into contact with the House of Tudor.

(2) Set forth in order the principal Acts of the "Reformation Parliament," pointing out the purport of each measure.

(3) Indicate the political importance of either (*a*) Henry VIII.'s marriages, **or** (*b*) Elizabeth's courtships and refusals to marry.

(4) Explain Queen Elizabeth's policy towards **either** (*a*) Ireland, **or** (*b*) the Puritans, **or** (*c*) the Netherlandish insurgents.

(5) How do the English insurrections of the Tudor period illustrate the tendencies and power of public opinion in England?

(6) Where are the following places, and how do they come into English History during this period?—*Azores, Brill, Cateau Cambrésis, Cleves, Guinegatte, Ludlow, Nombre de Dios, Pavia, St. Quentin, Utopia.*

Geography.

THE BRITISH ISLES AND AFRICA.

Every answer which admits of it should be given in tabular form.

(1) Draw a map of the Irish Sea, inserting the chief ports on both sides. Which route gives the shortest sea passage (i.) from England to Ireland; (ii.) from Scotland to Ireland?

(2) Account for the *locale* of the following industries:—Straw plaiting, wool, fuller's earth, biscuits, pottery.

(3) Draw a sketch map of the Basin of the Clyde, and state what manufactures are carried on in the towns along its banks.

What and where is Carstairs Junction?

(4) Compare the river systems of Great Britain and Ireland.

Describe the Great South and Western railway route from Dublin to Queenstown.

(5) Give a short description of the physical geography of Devon or Lanark or Galway.

(6) Draw a map of Africa, showing the colonies, or "spheres of influence" of the European Powers. Also insert the following:—The Orange River, St. Helena, Mauritius, Assouan, Kilimanjaro.

(7) For what reasons has it been thought necessary to build a large reservoir on the Nile?

Draw a sketch map of the Nile Delta.

(8) Write a short account of the natural features and the trade of Cape Colony.

(9) Describe briefly how the position of a ship in mid-ocean is determined?

(10) Explain these terms—mistral, pampas, wadi, monsoon, lagoon.

Through what countries does the Tropic of Cancer pass?

As You Like It.

(1) Show from the Play that Touchstone's function is to burlesque most of those with whom he is brought in contact.

(2) Illustrate the English elements in the natural life of the Forest of Arden.

(3) Explain with reference to the context:—

"Time is the old justice that examines all such offenders, and let Time try."

"Chewing the food of sweet and bitter fancy."

"Thy loving voyage
Is but for two months victualled."

"What he is, indeed,
More suits you to conceive than I to think of."

"Alas, poor shepherd! searching of thy wound,
I have by hard adventure found mine own."

(4) Explain the metre of:—

"The bonny priser of the humorous duke."
"This is no place; this house is but a butchery."
"You foolish shepherd, wherefore do you follow her?"

(5) Give the meanings and derivations of:—

puny, graff, curtle-axe, pantaloon, ditty, burgher, shrewd, uncouth, chopped, argument.

French.

(1) Give the primitive tenses of: *ronger, jeter, geler, peler, prospérer, se flatter, mener* and *ployer.*

(2) Write down the feminine plural of: *âgé, blanc, caduc, dissous, fier, gentil, jeune, las, nouveau, grec, secret* and *vengeur.*

(3) Distinguish between: *tout homme* and *tous les hommes*; *il a froid* and *il fait froid*; *tout le jardin* and *tous les jardins*; *ils se sont trompés l'un et l'autre* and *ils se sont trompés l'un l'autre.*

(4) Give the rule and principal exceptions for the formation of French adverbs.

(5) State the different cases when the subjunctive is used, and explain why in certain sentences this mood is to be employed instead of the indicative after adjectives in the superlative degree.

(6) Translate into English:—

Un antiquaire, nommé Douvrier, imagina pour Louis XVI. l'emblème d'un soleil dardant ses rayons sur un globe, avec ces mots: *Nec pluribus impar.* L'idée était un peu imitée d'une devise espagnole faite pour Philippe II., et plus convenable à ce roi qui possédait la plus belle partie du nouveau monde et tant d'états dans l'ancien qu'à un jeune roi de France qui ne donnait encore que des espérances. Cette devise eut un succès prodigieux. Les armoiries du roi, les meubles de la couronne, les tapisseries, les sculptures en furent ornées. Le roi ne la porta jamais dans ses carrousels.

(7) Translate into French:—

Macbeth invited Duncan to visit him at his great castle near Inverness; and the good king, who had no suspicion of his kinsman, accepted the invitation very willingly. Macbeth and his wife received the king with much appearance of joy, and prepared a great feast as a subject would do to bid his king welcome.

(8) Racine's "Athalie."

(*a*) Translate Act 1, Scene I., ll. 1-12; Act 2, Scene V., ll. 6-12; Act 3, Scene III., ll. 1-10.

(*b*) Explain: *premices, trépas, marâtre, la chaire empestée.*

(9) "Colomba." (References to Pitt Press edition.)

(*a*) Translate:—p. 5, ll. 22-30; p. 17, ll. 27-33; p. 46, ll. 3-10.

(*b*) Explain: *en semestre*; *se guinder*; *les trois S.*; *tripot*

Euclid.

(1) If two triangles have two sides of the one equal to two sides of the other each to each, and have also the angles contained by these sides equal, then shall the triangles be equal in all respects.

BAC is a right-angled triangle with the right angle at A; BA is produced to H, making AH equal to AC; from C and H straight lines CE and HE are drawn perpendicular to BC and BH respectively. Show that EH equals the difference between BA and AC.

(2) Triangles on the same base and between the same parallels are equal in area.

Bisect a triangle by a straight line drawn through a point in one of its sides.

(3) If a straight line is divided into any two parts, the sum of the squares on the whole line and on one of the parts is equal to twice the rectangle contained by the whole and that part together with the square on the other part.

(4) In a circle equal chords are equidistant from the centre, and chords which are equidistant from the centre are equal.

In a given circle draw a chord equal to a given straight line which is not greater than a diameter of the circle, and also at right angles to another given straight line.

(5) In equal circles, equal angles, whether they be at the centres or at the circumferences, stand on equal arcs.

Two equal circles have a common chord AB, and P is any point in the circumference of one of the circles; if PA be joined cutting the circumference of the other circle in Q and PR be drawn at right angles to PA to meet QB produced in S, show that QS is bisected in B.

(6) Inscribe a circle in a given square.

In a given regular polygon inscribe a circle and show that its centre is also the centre of the circumscribing circle.

(7) In equiangular triangles the sides which are opposite to the equal angles in each are proportional.

Through an angular point A of a given parallelogram ABCD any straight line PAQ is drawn, meeting the sides BC, DC, produced, if necessary, in P and Q; show that the rectangle contained by BP, DQ is constant.

(8) Draw a straight line perpendicular to a given plane from a given point outside it.

Algebra.

(1) If a rational integral expression involving a become equal to 0 when b is written for a, it will contain $a-b$ as a factor.

Thence find the factors of

$$a^2(b^3-c^3)+b^2(c^3-a^3)+c^2(a^3-b^3).$$

(2) Simplify:—

(i.) $\left(\frac{a^4}{b^2}-\frac{b^4}{a^2}\right) \div \left(\frac{a^3}{b}+ab+\frac{b^3}{a}\right)$;

(ii.) $$\frac{\sqrt{10}+5}{\sqrt{15}+\sqrt{6}+\sqrt{5}+\sqrt{2}}-\frac{\sqrt{2}+\sqrt{3}}{\sqrt{15}+\sqrt{3}+\sqrt{10}+\sqrt{2}}-\frac{\sqrt{3}(\sqrt{3}-1)}{\sqrt{15}+\sqrt{5}+\sqrt{3}+1}.$$

(3) Find the sum of a series of n terms in arithmetical progression, the first and last terms being given.

If the four quantities a, b, c, d be in geometrical progression, show also that the quantities $(a+b)^2$, $\frac{c}{d}$ and $\frac{1}{(b+c)^2}$ are in geometrical progression.

(4) Solve the equations:—

(i.) $\frac{8}{5x}-\frac{5}{2y}=\frac{1}{2}$, $\frac{9}{4x}+\frac{7}{3y}=\frac{73}{4}$

(ii.) $x^3+y^3=133$, $x^2y+xy^2=70$.

(iii.) $\sqrt{3x+4}-\sqrt{x+2}=\sqrt{x-3}$.

(iv.) $x+y+z=a$, $xy+yz+zx=-a^2$, $xyz=-a^3$.

(5) The aggregate number of marks obtained by the boys of one class was 720, and of another class was 1,170; if the average of the two classes together was five more than the average of the first class, and four less than the average of the second, find the number of boys in each class.

(6) Find the number of ways in which n things may be arranged among themselves, taking them all at a time when p of the things are exactly alike of one kind, q of them exactly alike of another kind, r of them exactly alike of a third kind, and the rest all different.

In how many ways can an arrangement of three letters be made out of the letters of the word *llanfyllin*?

(7) Prove the Binomial Theorem for the expansion of $(a+x)^n$ in ascending powers of x, when n is a positive integer.

Find the general term in the expansion of $(1+x)^{\frac{1}{3}}$; and thence find the cube root of 126 to five places of decimals.

(8) Define the logarithm of a given number to a given base, and show that the logarithm to a given base of the product of two numbers is equal to the sum of the logarithms to the same base of the factors of the product.

Simplify $\log\{(\cdot125)^{\frac{1}{4}} \times (2\cdot4)^{\frac{1}{3}} \div (1\cdot5)^{\frac{1}{2}}\}$ and find its numerical value, given $\log 2=\cdot3010300$ and $\log 3=\cdot4771213$.

(9) Expand a^x in ascending powers of x.

Find the sum of the infinite series

$$1+\frac{1}{\underline{|2}}+\frac{1}{\underline{|4}}+\frac{1}{\underline{|6}}+\ \cdots$$

(10) State and prove the rule for forming the successive convergents to the continued fraction $\frac{1}{a_1+}\,\frac{1}{a_2+}\,\frac{1}{a_3+}\,\frac{1}{a_4+}\cdots$

Convert $\sqrt{13}$ into a recurring continued fraction.

Answers.

(1) $(a-b)(b-c)(c-a)(ab+bc+ca)$. (2) (i.) $\frac{a}{b}-\frac{b}{a}$;

(ii.) $\frac{1}{\sqrt{3}+1}$. (4) (i.) $x=\frac{1}{5}$, $y=\frac{1}{3}$; (ii.) $x=2$ or 5, $y=5$ or 2;

(iii.) $x=7$; (iv.) $a, a, -a$. (5) 24 and 30. (6) 151.

(7) $(-1)^{r-1}\frac{1.2.5.\ \cdots\ (4-3r)}{\underline{|r}}\cdot\left(\frac{x}{3}\right)^r$; 5·01329.

(8) $\frac{3}{4}\log 2-\frac{1}{6}\log 3-\frac{1}{3}$; $\bar{1}\cdot8129190$. (9) $\frac{1}{2}(e+e^{-1})$.

(10) $3+\frac{1}{1+}\,\frac{1}{1+}\,\frac{1}{1+}\,\frac{1}{1+}\,\frac{1}{6+}\cdots$

JUNIOR CAMBRIDGE LOCAL EXAMINATION, DECEMBER, 1900.

Revision Test Papers.—No. 1.

Two revision test papers in the ten most commonly offered subjects of the Junior Cambridge Local Examination in December, 1900, have been prepared for THE SCHOOL WORLD by teachers of experience. The first of these is here printed; the second will appear in our November number.

Copies of the papers in any of the subjects can be obtained in a form suitable for distribution in class. The reprinted papers are sold in packets of twenty-five, at a cost of 6d. net for each subject. The papers may be ordered through a bookseller, or they may be obtained (post free) from the editors of THE SCHOOL WORLD, but in the latter case all orders *must be prepaid.*

Arithmetic.

A.

(1) Divide nine hundred and seventy-nine thousand and forty-four by one hundred and thirty-two. Express your answer in words.

(2) Find in its simplest form the value of—

$$(3\tfrac{2}{7}+4\tfrac{5}{14})\div 6\tfrac{7}{41}\text{ of }2\tfrac{3}{16}.$$

(3) Divide the product of 4·375 and 250·2 by 3·72 correct to three decimal places.

(4) A train leaves Euston at 1.30 and arrives at Rugby, a distance of 77 miles, at 3.8; at what time should it reach Birmingham, distant 110 miles from Euston, supposing the train to move uniformly throughout the journey, with the exception of a stop of ten minutes at Rugby?

(5) Supposing the value of a dollar to be 49·29d., and of a franc to be 9·51d., what is the least number of francs that will equal an exact number of dollars, and what is the value in francs and centimes, to the nearest centime, of 100 dollars?

(6) In what time will £1,475 6s. 3d. amount to £1,681 17s. 1½d. at 3½ per cent. Simple Interest?

B.

(1) Simplify (i.) $\frac{6\frac{2}{7}-1\frac{1}{4}\text{ of }3\frac{2}{7}}{6\frac{2}{7}\times1\frac{1}{4}-3\frac{2}{7}}$ of $\frac{3\frac{5}{9}}{9\frac{1}{4}}$ of £1 4s. 9d.

Divide (ii.) 18·785 by $4\cdot3\dot{7}\dot{8}$.

(2) Find the length of fence required to enclose a rectangular field twice as long as it is broad, its area being 12 ac. 2 rs. 24 per. 24 yds.

(3) A dealer sells an article for £6 5s., making a profit of 25 per cent.; if the cost of manufacture be equal to the cost of material, and the manufacturer in selling to the dealer also makes a profit of 25 per cent., what was the original cost of the material?

(4) A man invests £12,950 in 2¾ per cent. stock at 101¾. What is his income?

If, instead, he had invested in 7 per cent. railway stock, his income would have been increased by £20, what is the price of this latter stock? (Brokerage not reckoned.)

(5) An employer reckons that he works four hours a day, in a week of five days; a mechanic works twice this number of hours per day in a full week of six days, and can only earn one-fifth of what his employer earns; if the mechanic be paid at the rate of 8d. an hour, at what rate must the employer value his time?

(6) A wine merchant buys two kinds of spirit at 15s. 6d. and 17s. 6d. a gallon respectively. In what proportion must he mix them so as to gain 14 per cent. by selling for 19s. a gallon?

Answers.

A. (1) 7417. (2) $\frac{1}{27}$. (3) 294·254. (4) 4 o'c.
(5) 1,643 frs.; 518 frs. 30 c. (6) 4 years.

B. (1) (i.) 3s. 8d.; (ii.) 4·29. (2) 1,050 yds. (3) £2.
(4) £350; 245. (5) 8s. an hour. (6) 5 : 7.

St. Luke.

(1) Say what you know about Theophilus.

(2) Describe fully what took place on the occasion of the entry of Jesus into the synagogue at Nazareth.

(3) Give in your own words two parables and two miracles which are recorded by St. Luke alone.

(4) What references are made in this gospel to Abel, the Queen of Sheba, Elisha, Nineveh and Cyrenius?

(5) Which of the Seven Words on the cross are recorded by St. Luke? And what appearances of Jesus after his resurrection?

(6) Relate the incident of the Widow's Mite, and say what teaching Jesus connected with it.

(7) Explain fully :—

(*a*) Wisdom is justified of her children.
(*b*) He loveth our nation and hath built us a synagogue.
(*c*) No prophet is accepted in his own country.

(8) What was the teaching of Jesus about the service of humanity?

Acts of the Apostles.

(1) Give a brief sketch of Paul's first missionary journey, and illustrate it by a map.

(2) What happened to the Apostles at Lystra?

(3) What parts were taken respectively by Peter and by James at the council in Jerusalem?

(4) What uses did Paul make of his Roman citizenship? Narrate the circumstances fully.

(5) Give a summary of the speech on Mars Hill. What points in the Athenian character does it reveal?

(6) Give an account of St. Paul's voyage to Italy.

(7) Describe the trial of Paul, and say what you know about his subsequent history.

(8) Who were Apollos, Priscilla, Alexander the coppersmith, "a woman named Damaris," Demetrius, Philip the evangelist, and "Paul's sister's son;" and in what circumstances are they mentioned?

English Grammar.

PARSING AND COMPOSITION.

(1) Parse the words in italics :—

It is *one* of the Indian rules of politeness not *to answer* a public proposition on the same day *that* it is *made*: they think it would be *treating* it as a light *matter*, and *that* they show it respect by *taking* time *to consider* it *as* of a matter important.

(2) What are the rules governing the formation of the plurals of nouns in—es.

Explain the forms *riches*, *brethren*, *news*.

(3) Parse fully the adjectives in the following sentence :—

Those terrible disasters, each of which was in itself of fatal consequence, left the Polish nation with no hope and few friends.

(4) Give the Past Tense and Past Participle of—lie, lay, awake, wake, proffer, defer, singe, sit, set, saw.

Make sentences containing participles, the meanings of which imply (*a*) Time, (*b*) Cause, (*c*) Condition.

(5) Distinguish between Conjunctions and Conjunctive Adverbs.

Parse the words in italics in the following :—

"*Gather* the rosebuds *while* ye *may*,
Old Time is still *a-flying*:
And the same flower, *that* smiles to-day,
To-morrow *will be dying*."

(6) Devote half an hour to the writing of an essay on one of the following subjects :—Ivory. Emigration. King Alfred.

As You Like It.

(1) Paraphrase these passages :—

"By my troth, and in good earnest, and so God mend me, and by all pretty oaths that are not dangerous, if you break one jot of your promise, or come one minute behind your hour, I will think you the most pathetical break-promise, and the most hollow lover, and the most unworthy of her you call Rosalind, that may be chosen out of the gross band of the unfaithful: therefore beware my censure, and keep your promise."

"So holy and so perfect is my love,
And I in such a poverty of grace,
That I shall think it a most plenteous crop
To glean the broken ears after the man
That the main harvest reaps: loose now and then
A scatter'd smile, and that I'll live upon."

(2) Do you think Jacques had only himself to blame for his melancholy? Give your reasons.

(3) Is Orlando satisfactory as a hero? Write from the play in support of your view.

(4) Write out either (*a*) the two songs of Amiens, or (*b*) the Page's song.

(5) In what unusual senses does Shakespeare employ these words :—

unexpressive, waste, tax, quit, orchard, prevent, natural, indirect, fond, doom, conceit, beholding, abuse?

English History.

(1509-1603.)

Five *questions only to be attempted.*

(1) Write short notices of **any five** of the following persons :—Burghley, Cranmer, Cromwell, Fisher, Frobisher, Gardiner, Hawkins, Latimer, Parker, Sidney.

(2) Give an account of **either** (*a*) Henry VIII.'s breach with Rome, **or** (*b*) Queen Mary's reconciliation with Rome.

(3) Narrate the course of public affairs during the reign of Edward VI.

(4) **Either** (*a*) indicate the main outlines of Elizabeth's ecclesiastical policy, **or** (*b*) state concisely the objects of the principal laws concerning the Church made during her reign. In either case mention what classes of her subjects opposed her Church policy.

(5) Describe the coming and the defeat of the Spanish Armada.

(6) Briefly indicate the position and historical importance (during this period) of the following places :—*Cadiz*, *Cambray*, *Gravelines*, *Havre*, *Kinsale*, *Maynooth*, *Norwich*, *Plymouth*, *Smerwick*, *Solway Moss*.

Geography.

GREAT BRITAIN AND IRELAND: AFRICA.

(1) Draw a map of Africa and insert the following :—Drakenberg Mountains; Congo River; Lakes Nyassa and Tchad; the Transvaal Republic; Gulf of Sidra; Bight of Benin, Walfisch Bay, Equatorville, Buluwayo, Adamawa, Cairo, Fez, Beira.

(2) Name the county in which each of the following towns is situated :—Athlone, Bannockburn, Crieff, Dover, Lifford, Kettering.

Name *one* important industry of each of the following :—Aylesbury, Aberdeen, Belfast, Goole, Halifax. What and where are :—Chesil Bank, Ailsa Craig, Valentia, Tuskar Rock, Blackgang Chine?

(3) Draw a map of the basin of the Thames or of the Severn. How is communication between these two rivers effected?

(4) What are the chief industries of Ireland, and where are they carried on?

(5) Between what parallels of latitude does Great Britain lie? Between what meridians of longitude? From these data calculate (approximately) its area.

(6) Give a short description of the river Nile. What other rivers flow in a northerly direction?

(7) How is each of the following states governed :—Congo Free State, Morocco, Cape Colony, Egypt? Name the capital of each.

What time is it at Cape Town when it is noon at Greenwich?

(8) From what parts of Africa do we get :—gold, palm oil, cotton, ivory, cloves?

Write a general description of the trade of Natal.

(9) Explain the following terms :—Wadi, Delta, Kopje, Oasis, Watershed.

What is the cause of the trade winds?

(10) What do you know of the railways of Africa?

French.

(1) Translate into English :—

Un des premiers exploits des troupes anglaises fut de prendre Gibraltar, qui passait avec raison pour imprenable. Une longue chaine de rochers en défendent toute approche du côte de la terre; il n'y a point de port. Une baie longue et *mal* sûre y laisse les vaisseaux exposés aux tempêtes et à l'artillerie de la forteresse. Mais la force même de la ville fut la cause de la prise. Il n'y avait que cent hommes de garnison; c'*en* était assez; mais ils négligeaient un service *qu*'ils croyaient inutile.

(2) Parse the words in italics in question 1.

(3) Give the feminine of—*franc*, *sec*, *vieux*, *frais*, *épais*.

(4) Express in French words—$\frac{3}{5}$, $\frac{1}{3}$, Charles the First, Charles the Second, a thousand men, 380 men.

(5) Give the third person plural (indicative and subjunctive present) of—*vouloir*, *savoir*, *faire*, *prendre*, *mourir* and *courir*.

(6) Translate into French :—

What a pretty town! Almost every house has a large garden. Green trees grow in the principal streets; in the spring and summer birds sing everywhere, all day and half the night; and it is hard to remember one is not in the country. It is a city surrounded with woods and hills; there is no river, otherwise I should like it better than the towns I have hitherto seen in England.

(7) "Colomba" (References to Pitt Press edition.)

(a) Translate:—p. 3, ll. 7-17; p. 17, ll. 20-26; p. 33, ll 7-17.

(b) Explain *caporaux, de plus belle, crassés, dormait sur les deux oreilles.*

(8) "Rémi en Angleterre." (References to Pitt Press edition.)

(a) Translate:— p. 3, ll. 15-22. p. 17, ll. 5-11. p. 23, ll. 17-27.

(b) Explain *plus qu'il ne fallait, fait recette, payé notre nuit, nous fit monter.*

Euclid.

(1) Define a plane surface, a circle and a square.

(2) The angles at the base of an isosceles triangle are equal, and if the equal sides are produced the angles on the other side of the base are equal.

(3) If from the ends of a side of a triangle straight lines be drawn to any point within the triangle, these straight lines shall be together less than the other two sides of the triangle, but shall contain a greater angle.

(4) Describe a parallelogram equal to a given triangle and having one of its angles equal to a given angle.

(5) If a straight line be bisected and produced to any point, the rectangle contained by the whole line thus produced, and the part of it produced, together with the square on half the line bisected, is equal to the square on the straight line made up of the half and the part produced.

(6) The diameter is the greatest chord of a circle, and of others that which is nearer to the centre is greater than the one more remote.

(7) If from the point of contact of a tangent to a circle a chord be drawn, the angles which this chord makes with the tangent are equal to the angles in the alternate segments.

(8) On a given straight line as base describe a triangle having one of its base angles equal to a given angle, and the sum of its sides equal to a given straight line which is greater than the given base.

(9) ABCD is a quadrilateral whose opposite sides AB, DC are parallel, and whose sides DA, AB, BC are equal. Show that the opposite angles are either equal or supplementary.

(10) The middle points of the sides of a triangle, and the foot of the perpendicular drawn from an angular point to one of the sides, lie on a circle.

(11) ABC is a triangle right angled at C; AD and AE are the internal and external bisectors of the angle BAC, meeting BC or BC produced in D and E. Show that the straight line drawn from A at right angles to BA passes through the middle point of DE.

Algebra.

A.

(1) (i.) Define a term, a coefficient and an index;

(ii.) Explain why $a-(b-c)=a-b+c$.

(2) Divide $x^5-4x^4y+x^3y^2-x^2y^3-2xy^4-y^5$ by x^2-xy+y^2.

(3) Resolve into factors:—

(i.) $3a^2+2ab-21b^2$; (ii.) a^5-ab^4.

Simplify $\left(\frac{3b-a}{3a-b}-\frac{b-3a}{a-3b}\right)\times\left(\frac{1}{a+b}+\frac{2}{a-3b}\right)$.

(4) Solve the equations:—

(i.) $\frac{3(x-h)}{4}-\frac{2x}{3}=\frac{9h}{4}$;

(ii.) $(x-a)(x-3a)=x(x-5a)-3a^2$;

(iii.) $7x-9y=11$;
$x+5y=-11$.

$$\frac{\quad}{x-4} \qquad 1+\frac{x-4}{x-2}.$$

(5) A had 5s. more than B; A paid a fourth part of his money to B and B returned a twentieth part of what he then had; B then had 3s. more than A. How much had each at first?

(6) Prove that $(ab)^n=a^nb^n$, n being a positive integer and a and b any quantities whatever.

Simplify $\left(\frac{a^{\frac{1}{4}}}{a^{-\frac{1}{4}}}\right)$

B.

(1) Solve the equations:—

(i.) $bc(x^2-1)-a[\overline{b+c}\,x-\overline{b-c}]+a^2=0$.

(ii.) $3x^2-xy=6$; $y^2-xy=3$.

(2) If $a:b=b:c$ prove that

$a:c=\sqrt[3]{4a^6+5b^6}:\sqrt[3]{4b^6+5c^6}$.

(3) Find the sum of n terms of an Arithmetical Progression whose first term is a and whose common difference is d.

Sum the following progressions:—

(i.) $\frac{1}{5}-1-\frac{11}{5}-\frac{17}{5}-\dots$ to n terms;

(ii.) $5-1+\frac{1}{5}-\dots$ to 5 terms and to infinity.

(4) Find the number of ways in which $m+n+p$ things can be divided into three classes, one containing m things, another n things and the third p things.

How many different numbers can be formed by using the five digits 4, 7, 3, 0, 3?

(5) Expand by the binomial theorem $(1-x^3)^{-4}$ as far as 5 terms. Find the middle term of $(3x-2y)^{10}$.

Answers.

A. (2) $x^3-3x^2y-3xy^2-y^3$. (3) (i.) $(3a-7b)(a+3b)$; (ii.) $a(a-b)(a+b)(a^2+b^2)$; $\frac{8(a-b)}{(a-3b)^2}$. (4) (i.) $36h$; (ii.) $-6a$; (iii.) $x=-1$, $y=-2$; (iv.) 3 or 6. (5) 20s. and 15s. (6) $\sqrt{a}$.

B. (1) (i.) $\frac{a+b}{b}$ or $\frac{a-c}{c}$; (ii.) $x=\pm 2$, $\pm\sqrt{\frac{3}{2}}$, $y=\pm 3$, $\mp\sqrt{\frac{3}{2}}$. (3) (i.) $\frac{n(4-3n)}{5}$; (ii.) $4\frac{21}{125}$, $4\frac{1}{6}$. (4) $\frac{\lfloor m+n+p}{\lfloor m\,\lfloor n\,\lfloor p}$; 48. (5) $1+4x^3+10x^6+20x^9+35x^{12}$; $252(3x)^5(2y)^5$.

PRELIMINARY CAMBRIDGE LOCAL EXAMINATION, DECEMBER, 1900.

Revision Test Papers. No. 1.

Copies of the following papers can be obtained in a form suitable for distribution in class. Particulars as to price and how copies may be obtained will be found on p. 354.

Arithmetic.

(1) Divide seventeen million, four hundred and nine thousand, three hundred and fifteen by eleven. Express result in words.

(2) Multiply £413 17s. 2¼d. by 73.

(3) Reduce 643935 inches to miles, furlongs, &c.

(4) Simplify $6\frac{3}{4}-\{12\frac{3}{5}\times\frac{11}{13}$ of $\frac{17}{77}+\frac{2}{11}$ of $1\frac{23}{52}\}$.

(5) Add together 14·371, 3·7141, 3714 102 and ·00371.

Divide ·19419746 by 3·182.

(6) Find by practice the value of a collection of 1765 books, the average value of five books being 17s. 7½d.

(7) If a train can travel over a distance of 880 metres in 33 secs., how many kilometres will it traverse in 2 hours and ten minutes? [1 kilometre = 1000 metres.]

(8) What is the simple interest on £615 17s. 6d. in 4 years at 3¾% per annum?

(9) A bankrupt's assets amount to £4034 10s. 5d. and his debts are £6247, how much can he pay in the pound?

(10) A draper buys 120 yards of material for £16 5s.; at what price per yard must he sell it so as to gain 30%?

(11) What is the length of a room 14 feet wide, the carpet to cover which costs £5 17s., the price of the carpet being 3s. 3d. per yard, and width 28 inches?

(12) An income of £454 is obtained by investing £14528 in the 3½ per cents; what is the price of the stock?

Answers.

(1) 1582665. (2) £30,211 14s. 8¼d. (3) 10 mi. 1 fur. 12 po. 1 yd. 3 in. (4) ¼. (5) 3732·19081; ·06103. (6) £311 1s. 7½d. (7) 208. (8) £92 7s. 7½d. (9) 12s. 11d. (10) 3s. 6½d. (11) 18 ft. (12) 112.

St. Luke.

(1) How does the first mission of the Twelve Apostles mark a great division in the life of Jesus?

(2) In what connections are Moses and Elijah introduced into the gospel of St. Luke?

(3) Describe the Mission of the Seventy.

(4) How do you explain the parable of the barren fig-tree, and what lesson was it designed to convey?

(5) Explain as fully as you can, giving the context:—

"Go and tell that fox."

"One of the old prophets."

"Does he thank that servant because he hath done as he commanded him?"

(6) Relate and comment upon the parable of the Unjust Judge.

(7) Compare the Lord's Prayer given in this gospel with the version of it in the gospel of St. Matthew.

(8) Who were the Sons of Thunder, Jonas, Beelzebub and the Unbelievers? Explain the connections in which they are mentioned.

Exodus.

(1) Relate in your own words the circumstances of the birth and upbringing of Moses until his flight from Egypt.

(2) Give the terms of Moses' commission as deliverer of the Chosen People; what nations were to be overcome? and what circumstances attended the giving of the commission?

(3) Relate any two of the Ten Plagues.

(4) Sketch the career of Aaron.

(5) "A foreigner and a hired servant shall not eat thereof." When were these words used, and why?

(6) Say all you know about the Passover Feast, and how was it finally superseded.

(7) Draw a map to illustrate the Deliverance from Egypt.

(8) Who were Jethro, Miriam, Zipporah? and where were Pithom, Raamses, the wilderness of Shur and Elim?

(9) Write out either (*a*) the Ten Commandments or (*b*) the Song of Moses.

Grammar.

I.—PARTS OF SPEECH. DEFINITIONS. COMPOSITION.

(1) What is meant by parsing? Explain carefully the function of each word in the sentence:—

"Three extremely light skiffs approached our ship."

(2) How do you distinguish between an adjective and an adverb? Give examples to show that some words may belong to both parts of speech.

(3) What is a relative pronoun?

Construct a sentence consisting of two verbs, a noun, a relative pronoun, an adjective and an adverb.

(4) Define (i.) *Tense*; (ii.) *Mood*.

Give the tense and mood of each verb in the following passage:—"It happened once that two friars walking along a road saw a countryman leading a horse. "Ah," says one, "who will walk when he may ride? Get upon your steed's back and learn to be wiser."

(5) Give examples to show the use of auxiliary verbs.

(6) Parse fully the words in italics:—(i.) They came here *after* the *others* had gone. (ii.) Why are you so *sad*? (iii.) *That* is one of the *finest* specimens I *ever* saw. (iv.) You *may give* *John* the book *that* he wants.

(7) Composition. Passage for reproduction.

The Old Man and his Ass.

An old man and a little boy were driving an ass to the next market to sell. "What a fool is this fellow," says a man upon the road, "to be trudging it on foot with his son that his ass may go light!" The old man hearing this set his boy upon the ass, and went whistling by the side of him. "Why, sirrah!" cried a second man to the boy, "is it fit for you to be riding while your poor old father is walking on foot?" The father, upon this rebuke, took down his boy from the ass and mounted himself. "Do you see," says a third, "how the lazy old knave rides along upon his beast, while his poor little boy is almost crippled with walking?" The old man no sooner heard this than he took up his son behind him. "Pray, honest friend," says a fourth, "is that ass your own?" "Yes," says the man. "One would not have thought so," replied the other, "by your loading him so unmercifully. You and your son are better able to carry the poor beast than he you." "Anything to please," says the owner, and, alighting with his son, they tied the legs of the ass together, and by the help of a pole endeavoured to carry him upon their shoulders over the bridge that led to the town. This was so entertaining a sight that the people ran in crowds to laugh at it, till the ass, conceiving a dislike to the over-complaisance of his master, burst asunder the cords that tied him, slipped from the pole and tumbled into the river. The poor old man made the best of his way home, ashamed and vexed that, by endeavouring to please everybody, he had pleased nobody and lost his ass into the bargain.

Marmion.

(1) Relate in your own words the tale which the host told to Marmion. How does it affect the story?

(2) Who were—De Worde, Lord Lion King-at-Arms, Earl Adam Hepburn, Earl of Angus, Earl of Surrey?

(3) Explain these allusions:—

"One of his own ancestry
Drove the monks forth of Coventry."
"I view yon Empress of the North
Sit on her hilly throne."
"In offices as strict as Lent
King James's June is ever spent."
"'Twas a brave race, before the name
Of hated Bothwell stain'd their fame."

(4) How does Marmion describe the natives of Yorkshire, Northumberland, Nottingham and Derby?

(5) Give the meanings of:—

tabard, pursuivant, gules, elfin, pentacle, palmer, falchion, budget, scrip, sumpter-mule.

English History.

(1509-1603.)

Five *questions only to be attempted.*

(1) Tell the story of **one** of the following:—(*a*) The Pilgrimage of Grace; (*b*) Ket's Rising; (*c*) Wyatt's Insurrection.

(2) Write a life of **either** (*a*) Sir Thomas More, **or** (*b*) Sir Francis Drake.

(3) Give an account of the reign of Queen Mary.

(4) Mention the causes of the quarrel between Elizabeth Tudor and Mary Stuart, and trace its course. How were the two queens related to one another?

(5) How was it that the English and the Spaniards came to hate one another in the reign of Queen Elizabeth? Describe fully any one deed of heroism that was done in the course of the strife.

(6) Write down in three columns:—(*a*) the following ten place names; (*b*) where the places are; (*c*) any notable event which happened there during this period.

Boulogne, *Calais*, *Flodden*, *Fotheringay*, *Langside*, *Newfoundland*, *Pinkie*, *Ulster*, *Virginia*, *Zutphen*.

Geography.

(GENERAL.)

(1) Describe as accurately as you can the position of the Transvaal, the Solent, Iceland, Gibraltar, Mexico, New Zealand, the Andes, Ceylon.

(2) Explain the following terms and give one example of each:—peninsula, volcano, delta, lake, watershed.

(3) Mention the chief exports of India, Germany, Cape Colony, Italy.

(4) Name two rivers (not in Great Britain) that flow southward, and two that flow westward.

What are canals?

(5) In what parts of the world do we find:—gold, rice, oranges, pearls, reindeer, kangaroos?

(6) Where are:—Behring Strait, the Himalayas, the Appenines, the Yellow Sea, the Red Sea, the Blue Mountains?

(7) Name (i.) the highest mountain in the world; (ii.) the largest river; (iii.) the hottest country; (iv.) the largest island.

(8) Where do these people live:—Dutch, Maoris, Esquimaux, Kaffirs, Moors, Finns?

French.

(1) Give the feminine of—*doux*, *frais*, *chanteur*, *mortel*; and the plural of—*mal*, *fils*, *œil*, *lieu*, *tout*; and the comparative of—*bon*, *bien*, *mauvais*.

(2) Give in words the French for—8, 27, the 80th, 500 men and ½.

(3) Write in full the present indicative of *rendre*, the imperfect indicative of *punir*, and the imperfect subjunctive of *recevoir*.

(4) Translate into English:—

L'heure du dîner venue, elle fit dire qu'elle se trouvait malade et qu'elle ne descendrait pas. Dans sa chambre était un prie-Dieu où elle resta à genoux jusqu'au soir. Sa femme de chambre entra plusieurs fois, ayant reçu l'ordre de veiller sur elle; elle ne répondit pas à ce qu'on lui disait. Vers huit heures du soir elle sonna et ordonna qu'on mît le cheval à la voiture.

(5) Translate into Fench:—

When I go for a walk, I take a book with me in my pocket; but I do not read it. My eyes rest on the tall mountains, the green fields, the long white road and the village church; I see the cows by the river, whose banks are covered with blue and yellow flowers. After an hour's rest I go home to read.

(6) "Remi en Angleterre." (References to Pitt Press edition.)

(*a*) Translate:—p. 45, ll. 12-17; p. 49, ll. 20-26, and p. 56, ll. 24-29.

(*b*) Explain *poste restante*, *rien de rien*, *en pleine nuit noire*.

Euclid.

(1) Define a plane angle, a plane figure, and parallel straight lines.

Write out the Postulates. Of what instruments do the Postulates demand the use?

(2) From a given point draw a straight line equal to a given straight line.

(3) If two triangles have two sides of the one equal to two sides of the other, each to each, and have also their bases or third sides equal, then the angle contained by the two sides of the one is equal to the angle contained by the two sides of the other.

ABCD is a rhombus; show that the diagonal AC bisects each of the angles BAD, BCD.

(4) If a straight line falling on two other straight lines make the two interior angles on the same side together equal to two right angles, the two straight lines are parallel.

(5) If a side of a triangle be produced, the exterior angle so formed is equal to the sum of the two interior and opposite angles, and the three interior angles are together equal to two right angles.

When are two angles said to be "complementary?" and when "supplementary?"

Two isosceles triangles are on the same base and on the same side of it; show that if the vertical angles are supplementary, the base angles are complementary, and conversely.

(6) If a triangle and a parallelogram be on the same base and between the same parallels, the area of the parallelogram is double that of the triangle.

(7) If the square described on one side of a triangle be equal to the sum of the squares described on the other two sides, then the angle contained by these two sides is a right angle.

(8) ABC is any triangle; draw a straight line DE parallel to the base BC, and meeting the sides in D and E, so that BD may be equal to DE.

(9) The parallelogram about the diagonal of a square is also a square.

(10) If a straight line be bisected and produced to any point, the rectangle contained by the whole line thus produced, and the part of it produced, together with the square on half the line bisected, is equal to the square on the straight line made up of the half and the part produced.

Algebra.

(1) Subtract $3a^2-(2ab+b^2)$ from $b^2-2(ab+a^2)$.

If $a=7$, $b=2$ and $c=0$, find the values of

(i.) $3a(b-c)+b(c-a)$,

(ii.) $3a^2-(2ab+b^2)$,

(iii.) $3a\{a-(b+c)(c-a)\}$.

(2) Multiply $6x^2-3xy+2y^2$ by $2x^2-4xy+6y^2$.

Divide $x^5-5x^3+3x^2+6x-6$ by x^2-2.

(3) Find the continued product of $a-b$, $a+b$ and a^2+b^2, and show that the result is equal to the square of a^2+b^2 diminished by twice the product of b^2 and the sum of the squares of a and b.

(4) Reduce to their simplest forms

(i.) $\frac{2}{x+5}-\frac{3}{x+4}+\frac{x}{(x+4)(x+5)}$;

(ii.) $\frac{a^2x^2-ax^3}{ax+x^2}\times\frac{a^3x+a^2x^2}{a^2-ax}\times\frac{a^2+x^2}{a^2x^2}$.

(5) Solve the equations:—

(i.) $\frac{1}{2}(3x-7)=3\frac{1}{2}-\frac{1}{6}(14+5x)$;

(ii.) $3(x+7)-7(y+2)=6$
$7(x+2)-3(y+7)=4$.

(6) A boy sold a cricket bat and two cricket balls for 22s. 6d.; the bat cost three times as much as a ball; what was the price of each?

(7) Resolve into factors

(i.) $3x^2+13x-10$;

(ii.) $1+b-2ab-4a^2$.

Find the lowest common multiple of

$2x^2-7x+3$, $2x^2+9x-5$, $x^2+2x-15$.

(8) Solve the equations:—

(i.) $p(x-p)+q(y+p)=0$,
$q(q-x)-p(y-q)$

(ii.) $\frac{x}{x-2} \quad 1=x-3$.

(9) A certain sum of money is divided equally amongst a number of persons; if there had been ten shillings more each person's share would have been increased by a half, and if there had been two persons less, each share would have been doubled; how much money was divided and how much did each receive?

(10) Find the sums of the following series:—

(i.) $7,\ 8\frac{1}{3},\ 9\frac{2}{3},\ 11\ \ldots$ to 12 terms;

(ii.) $a^2,\ a,\ 1\ \ldots$ to infinity.

Answers.

(1) $2b^2-5a^2$; (i.) 28, (ii.) 115, (iii.) 441.
(2) $12x^4-30x^3y+52x^2y^2-26xy^3+12y^4$; x^4-3x+3
(4) (i.) $-\frac{}{(x+4)(x+5)}$; (ii.) a^2+x^2. (5) (i.) 2
(ii.) $x=2$, $y=1$. (6) Bat, 13s. 6d., ball, 4s. 6d.
(7) (i.) $(3x-2)(x+5)$; (ii.) $(1-2a)(1+2a+b)$; $(2x-1)(x-3)(x+5)$. (8) (i.) $x=p-q$, $y=0$;
(ii.) $x=1$ or 4. (9) 20s. and 5s. (10) (i.) 172; (ii.) $\frac{a^3}{a-1}$.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in The School World *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

The Teaching of Science.

May I bring before the notice of your readers a question which is causing me some anxiety? In many papers I continually find the statement that the only right way to teach Science is along what is fashionably called "heuristic" lines. Yet my experience continues to be that this research method breaks down as soon as the stage is reached at which an acquaintance with the classical experiments of the masters in science becomes necessary. Many of the experiments of which our pupils must have a sound knowledge, if they are to continue their studies seriously, are quite unsuitable for them to perform themselves. So that if we begin to teach our students by making them find out for themselves, we have to discontinue the plan at a very early date. From enquiries I have made among science teachers of my acquaintance, I find that I am not alone in my inability to adopt the heuristic method throughout the whole of a school science-course. It may be that some of your readers have had no such difficulty, and that they will be able and willing to help me and my friends. What is the usual rate of working in classes where young students begin the study of science under the guidance of advocates of this "find out for yourself" method? It would not only be extremely helpful to teachers like myself to learn something on this point, but interesting to all teachers of science. If it were possible, with your assistance, to get a number of expressions of opinion on the value of the "heuristic method"—from the practical teacher point of view—many country teachers like myself would begin to have an idea as to whether we ought to try the research plan again, or endeavour to apply to the teaching of science the very sensible rule of adapting one's methods of teaching to the particular circumstances of the class and the appliances at one's disposal.

S. K.

[We invite those of our readers who have tried the Heuristic Method of teaching science to briefly describe their experience.—Editors, S. W.]

The Training of Secondary-School Teachers in Ireland.

May I call your attention to a slight inaccuracy in the July number of The School World? Under the head of "Irish" (news) it is stated that the Central Association of Irish Schoolmistresses, in conjunction with Alexandra College, are about to make the *first* attempt to give training to secondary-school teachers in Ireland. You are doubtless not aware that during the year 1896-7 members of the Ursuline Convent, Waterford, went through a course of training for the examinations and diplomas for teachers in connection with the University of Cambridge. Since that time a training college, recognised as such by the Teachers' Training Syndicate of the University of Cambridge, has been established at the convent. Waterford is now named as one of the centres, and examinations are held there in June each year. Seven members of the community hold diplomas for both theory and practice, and of the seven *five* have obtained "distinction" in "practical efficiency."

A Reader of The School World.

Waterford,
August 4th, 1900.

[Our correspondent has misapprehended the meaning of the paragraph in "Items of Interest" to which she refers. Our meaning was, that the examinations and diplomas recently established by Trinity College, Dublin, were the first attempt made in Ireland by any University or other public and endowed institution to encourage the practical study by secondary teachers of the science and art of education (although this recognition and help has long been given by such institutions in other countries), *not* that the courses which the Central Association hope will be held were the first such attempt. The work of the important convent to which our correspondent refers is well known to us.—Editors, S.W.]

What Becomes of Assistant-Masters?

Recent letters in your paper about the present condition of assistant-masters and their future prospects seem to me to lead to one of two conclusions; either those schoolmasters who are not chiefs are morbidly pessimistic, or else there is something very unsatisfactory in the proportion between the salary of the ordinary headmaster and his assistants.

In view of the fact that one, at least, of your correspondents is a master in one of our greatest public schools, and at the same time possesses a very high literary reputation, it would certainly appear that his remarks cannot be disposed of as those of a disappointed dominie—in other words, the second of the above alternatives is probably the more nearly correct.

"No man who has confidence in his own powers will enter a profession where merit and service count so little; he will prefer to take his chance where he may at least expect a fair field and not very much favour." So writes the Hon. Sec. of the Assistant-Masters' Association—and he ought to know what he is talking about. The same writer, in another part of his letter, says that when assistants really understand how remote are their chances of anything better than their present position, and how great is the probability of something in the way of a diminution of emoluments, they forthwith do all they can to leave the teaching profession. But as to what they do then, there seems to be considerable doubt. As it happens, I have long been interested in this very question. I have, moreover, from time to time made a considerable number of enquiries from people likely to know. My results are not encouraging; it is not surprising to me that assistants talk so much about their small hopes and their unsatisfactory present state. I wonder far more they are so astonishingly apathetic and stir themselves so little to improve their condition.

Five years ago I read in an educational paper (now no more) the following words about the assistant-master in a secondary school—which not only influenced me very considerably, but a good many other men I then knew: "He belongs to a profession for which he has a dislike, and enjoys a very small income and no prospects. He is almost of necessity a celibate, and soon develops into a cynical misanthrope. This unsatisfactory condition of things he cannot look upon as his for as long a time as he likes to put up with it. He gets a year older every twelve months - which sounds like a truism merely; but, after comparatively few years, should he have the misfortune to find himself out of employment from one of the many causes which harass him, he finds it increasingly difficult to get another post. It may be said to be a rule of almost general application that no master of over thirty-five years of age is appointed to any assistantship worth having. The question which stares us in the face, what, then, becomes of assistant-masters? can only be partially answered. A few brilliant men take up literary work. A few fortunate ones become headmasters. The great majority become - what? Heaven only knows! They disappear, and their end is shrouded in mystery. One or two careers, it is whispered, have become enriched by them. Certain it is that there is a quiet dignity about sandwich men in large towns which used not to be noticed; and a fatherly manner about some of the elderly 'bus conductors one sometimes meets suggests possibilities on which it is perhaps not well to linger."

This paragraph was more than my sensitive nature could bear. I fled the profession; a cowardly enough proceeding, I am fain to confess, but one I have yet to regret. This does not exhaust my data as to what becomes of assistant-masters, but I have perhaps written enough to deter any young enthusiasts who may have lofty and exalted ideas of the nobility of the teaching profession, and propose to begin a career which the chances are they will live to loathe, or at all events cordially dislike.

G. H. Blakey.

Liverpool,
August 14th, 1900.

OUR CHESS COLUMN.

No 21.

I AM now able to give the full results of our Inter-School Correspondence Tourney, which commenced about sixteen months ago. Six schools entered, and they were placed in two divisions. Each played two games with the other schools in the division. The results were as follows :—

DIVISION A.

	Manchester	Cheltenham	Harrogate.	Points
Manchester Grammar School .		2	2	4
Cheltenham College ..	0		1	1
Harrogate New College	0	1		

DIVISION B.

	Bishop's Stortford	Trowbridge.	Merchant Taylors'
Nonconformist Grammar School ...		0	0
Trowbridge High School . . .	2	-	1
Merchant Taylors', London . .	2	1	

Thus three schools were left in the final round, and they played two games with each other. If any remained unfinished on July 26th, 1900, they were to be adjudicated. Fortunately all were concluded well within the time limit.

	Merch: Taylor	Trowbridge	Manchester.	Points
Merchant Taylors'				
Trowbridge .	0		0	0
Manchester .	1	2		3

It will be seen that Manchester and Merchant Taylors' tied for the prize—a set of large Staunton men with suitable board. The Editors have given them the choice of playing off for the one prize, or of each having a Staunton set without board. I have not yet heard from the two secretaries, Messrs. Bateman and Dick, but I congratulate them on the excellent fight they have made.

The tournament has been a great success ; of course, it has taken a long time to play, but this is unavoidable in correspondence games. The games in the final round averaged 37 moves each.

I have now to call the attention of secretaries and chess players generally to the following announcements :—

(1) Entries are invited for another Inter School Tournament. These must be received before the end of September. Suggestions as to the methods of play, prizes, &c., will be welcomed. I hope we shall have a large entry.

(2) Our monthly competitions recommence with the present number. The prizes given in connection with these have been much appreciated ; I wish that more boys and girls would enter for them.

(3) A gentleman (I am sorry that he will not allow me to publish his name) has offered prizes for the best games played, by correspondence or otherwise. The conditions have already been published, but I reproduce them with a slight alteration the donor wishes to make :—

Each game to be divided into three parts—the opening, the winning play, the end game. The opening need not be brilliantly played, but there must be no absolute blunder. The winning play must next be shown, and the mistake (which must not be a blunder) by which the opposing party is enabled to win. Finally, *all important variations* of the end game should be sent in. Of course, the side that has got ahead in the second part should always win. All games to be sent to me on or before October 30th. I give an illustrative game below.

	WHITE.		BLACK.	
1.	P—K4.	1.	P—K4.	
2.	P—KB4.	2.	P—Q4.	Opening.
3.	P—Q3.	3.	QKt—B3.	
4.	Kt—KB3.	4.	B—Q3	
5.	P—B5.	5.	P—Q5.	
6.	P—QB3.	6.	P x P.	
7.	Kt x P.	7.	Kt—Q5.	
8.	B—K2.	8.	Kt—KB3.	
9.	B—Kt5.	9.	P—KR3.	
10.	B—R4.	10.	Q—K2.	
11.	Castles.	11.	B—Q2.	
12.	B x Kt.	12.	Q x B.	
13.	Kt—Q5.	13.	Q—Q1.	Winning Play.
14.	Kt x Kt.	14.	P x Kt.	
15.	B—R5.	15.	P—QB3.	
16.	P—B6.	16.	P—Kt3.	
17.	B x P.	17.	B—K4.	
18.	B x P (ch.).	18.	K x B.	
19.	Q—R5 (ch.).	19.	K—K3.	An ending.
20.	Q—Kt6.	20.	P x Kt.	
21.	P—B7 (dis. ch.).	21.	K—K2.	
22.	P x P.		Q—B2.	
23.	QR—K1.		QR—KB1.	
24.	Q—B6 (mate).			

Competitors for prizes (which will be score sheets useful for the special competition mentioned above) must answer these questions. (Send in by September 25th.)

(*a*) At 16, why not Black P x Kt ?
(*b*) At 17, why not Black P x B ?
(*c*) Give an ending if 19 K—B1.

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The School World

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THE LAW RELATING TO THE TEACHER'S TENURE OF OFFICE.

By T. A. Organ,
Barrister-at-Law, of the Inner Temple and Oxford Circuit,
Author of "School Law," &c.

I.

In dealing with this subject, it is first necessary to state that the ordinary rules of law affecting the relations between master and servant govern the relations between a teacher and his employer, unless these relations are specially modified by statute, scheme, or trust deed. In this article it is only possible to state in brief form the rules of master and servant law which most frequently operate in the case of a teacher-servant.

First, as to the form of the contract. The terms of a binding contract may or may not have been reduced to writing. There is a single exception to this common-law rule, which is made by the Statute of Frauds. This statute provides that any contract which cannot be performed within one year must be evidenced by a memorandum in writing. If, therefore, a contract between a teacher and his employer is for more than one year, such contract cannot be enforced by either party unless there is written evidence of its existence. The statutory exception is not of importance in this connection, as an engagement between a teacher and his employer for more than a year certain is not frequently made, and if the engagement *can* be terminated in less than a year by the giving of due notice, its terms need not be in writing.

Incapacitation of the teacher to perform his duties, as a result of illness, often gives rise to dispute. Sometimes an employer refuses to pay salary for the period of incapacitation. Unless so agreed between the parties, the non-performance of duty by a teacher, such non-performance arising out of temporary illness, is no justification for the suspension of salary. Nor does absence from duty for such a cause justify dismissal without due notice being first given. If, however, a teacher is permanently unable to do his work, the contract may be determined. In the leading case on this point, the judge said: "He (the servant) could not be considered incompetent by illness of a temporary nature. But if he had been struck with disease, so that he could never be expected to return to his work, the master might have dismissed him and employed another in his stead."

As to termination of the contract of hiring and service, this may be brought about by either party to the contract giving due notice to the other party, unless it has been specifically agreed that the engagement shall terminate at a fixed date, or that no notice of intention to terminate the contractual relation shall be given. The length of the notice-period will be such as has been agreed upon by the parties. In the absence of any such agreement, either party is entitled to receive from the other a notice of reasonable length of an intention to terminate the contract. If custom in any particular profession as to length of notice can be proved, custom will prevail; but the present writer is of opinion that it would no be possible to prove that in the teaching profession there exists any "custom," as that term is legally understood.

The determination of what constitutes "reasonable" notice in any particular case depends finally on the circumstances of that case, but it appears to be generally accepted that, in default of agreement, assistant-teachers in public elementary schools are entitled to one month's notice and head teachers to three months. Successful claims for longer notice-periods have been made, and it is submitted that a master in a higher elementary school is entitled to a longer notice-period. In the case of secondary schools, an assistant-teacher usually can claim a term's notice, and a head-teacher a longer period. Generally, it may be said that the length of the notice-period which can be claimed varies directly with the importance of the position occupied and the professional status of its occupant.

There are circumstances the existence of which would justify the dismissal of a teacher without any previous notice. Typical of these circumstances are drunkenness in school hours, betting with scholars and encouragement of insubordination. All these have been held to justify instant dismissal; but the list is by no means exhaustive, as the law regards any kind of gross misconduct as sufficient reason for summary dismissal.

Wilful disobedience of the reasonable orders of the governors or the proprietors of the establishment is also a good ground for the summary dismissal of either a head or an assistant teacher, and an assistant is liable to the same penalty if he wilfully disobey the reasonable orders of his headmaster. The "reasonable" qualification is of importance, for if disobedience of an unreasonable order lead to summary dismissal, the teacher has a remedy in damages for breach of the contract to give proper notice. It is submitted that it would be unreasonable for a body of governors to order a headmaster not to give a summer vacation, or to order him not to inflict proper punishment upon any scholar; and that a headmaster would be acting unreasonably in ordering an assistant to perform menial work, or to teach a subject not included in an ordinary English course, and for the teaching of which special knowledge is required, provided the teacher has not engaged to teach that particular subject. On the other hand, incompetence to teach the subjects ordinarily included in the curriculum of the school is good ground for an abrupt ending to the engagement, as is also utter failure to maintain a reasonable standard of discipline. If, after engagement, a school authority discover that the engaged teacher has not the knowledge necessary to enable him to perform his work, or that he has not the skill to impart the knowledge he possesses, his services can be at once dispensed with, and he can maintain no claim to damages in lieu of notice. Should an action for damages be commenced by the teacher, the onus of proving incompetence will rest upon the school authority.

The use of false representations as to previous professional career, or of amended or emended testimonials of former employers, in order to obtain a post, is a cause for summary dismissal which is beyond question; and in such a case the school authority cannot be compelled to pay accrued salary.

There is a clear technical difference between dismissal and termination of contract which is frequently disregarded. The term "dismissal" is often loosely used when the idea of "termination of contract" is sought to be conveyed. Any employer of a teacher, unless there is a specific agreement to the contrary, is legally entitled to terminate the relationship of master and servant at any time without assigning any reason for such termination, provided always due notice is given or salary paid for the notice-period. This is not dismissal, but simple termination of contract. Summary dismissal must be for good reason, or the teacher will be entitled to damages. If a court award damages in such a case, it is evidence that, in the opinion of the court, the assigned reason is not good and that the teacher ought not to have been dismissed.

Specific performance of a contract of hiring and service will not be enforced by a court. Hence no teacher can compel his employer to permit him to continue to perform his duties for any period. At any time a school authority can suspend from duty any teacher, head or assistant, but such suspension does not relieve the authorities from their liabilities.

A teacher dismissed without notice, or whose contract has been terminated after an insufficient notice, is entitled to damages from the dismissing school authority, provided the dismissal or the short notice cannot be justified. As to the amount of damages, it will depend on the nature of the contract and the amount of salary. Generally the damages awarded do not exceed the amount of salary which would have been received for the unexpired period of the contract, but that amount may be lessened if it can be proved that the teacher's loss is not equivalent to the amount of salary. In legal parlance, the measure of damage is the pecuniary loss sustained as a result of the breach of contract.

I propose to deal with the modification of the general law, as contained in statute, scheme, or trust deed, in a separate section.

II.

The previous part has dealt with the law of Master and Servant, so far as it applies to contracts between a teacher and his employer in cases where no special conditions are implied or imposed by statute, scheme, or trust-deed. For the purposes of this article it should be assumed that the rules already stated apply to all such contracts, unless the subject of any of the rules is the matter of special agreement in any contract, or unless such contract falls within the exceptional classes which are described in this chapter.

First, as to those schools which are statutorily termed "public." These schools are Eton, Winchester, Westminster, Charterhouse, Harrow, Rugby and Shrewsbury. The conditions of the tenure of office of teachers in these schools are regulated by the Public Schools Act, 1868. The headmaster of every school to which this Act applies is appointed and holds his office at the pleasure of the governing body. The assistant-masters are appointed and hold their offices at the pleasure of the headmaster. The importance of the meaning to be attached to the words "at the pleasure" is evident; this is dealt with in later paragraphs.

A very large number of secondary teachers are working in schools governed by the provisions of schemes framed by the Charity Commissioners, under powers conferred by the Endowed Schools Acts. The Endowed Schools Act, 1869, states that in every scheme the Commissioners must provide for the dismissal at pleasure of every teacher and officer in the endowed school to which the scheme relates, including the principal teacher. The Act further provides that the Commissioners may so frame the scheme as to give to any teacher or officer the right to appeal from any decision of the governing body to dismiss such teacher or officer. To the discretion of the Commissioners it is left to determine whether in any particular scheme an appeal clause shall be inserted, and if inserted, the nature of such clause respecting the circumstances under which an appeal may be made and the mode of appeal.

Originally, the power of making schemes under these Acts was vested in the Endowed Schools Commissioners, but in 1874 the power was transferred to the Charity Commissioners. The practice of the Charity Commissioners has been, and is, not to provide for appeal in schemes for secondary schools. This is a variation from the later practice of the Endowed Schools Commissioners, who in 1872 determined to provide, "in all schemes which gave the headmaster the right of dismissing assistant-masters, to make such dismissal subject to an appeal to the governors." The present practice of the Charity Commissioners will be gathered from the following clauses of the scheme recently promulgated:—

(1) HEAD TEACHERS. (*a*) *Dismissal at Pleasure.*—"The school governors may at pleasure dismiss every headmaster and headmistress without assigning cause, after six calendar months' written notice given to him or her in pursuance of a resolution passed at two special meetings held at an interval of not less than fourteen days, such resolution being affirmed at each meeting by not less than two-thirds of the school governors present and voting on the question."

(*b*) *Dismissal for Cause.*—"In the case of each of the schools, the school governors, for what in their opinion is urgent cause, may by a resolution passed at a special meeting, and affirmed by not less than two-thirds of the whole number of school governors for the time being, declare that the headmaster or headmistress ought to be dismissed from office, as in this clause provided, and in that case they may appoint a second special meeting to be held not less than a week after the first, and may by a like resolution passed at such second meeting, and affirmed by not less than two-thirds of the whole number of school governors for the time being, thereupon absolutely and finally dismiss him or her. If at the first of such meetings the school governors think fit at once to suspend the headmaster or headmistress from office until the second of such meetings they may so suspend him or her by a resolution affirmed by not less than two-thirds of the whole number of school governors for the time being. Full notice and opportunity of defence at both such meetings shall be given to the headmaster or headmistress."

(2) ASSISTANT TEACHERS.—"The head-teacher shall have the sole power of appointing, and may at pleasure dismiss all assistant-teachers in the school, and shall determine, subject to the approval of the school governors, in what proportions the sum fixed by the school governors for the maintenance of assistant-teachers and school plant and apparatus shall be divided among the various persons and objects for which it is fixed in the aggregate, and the school governors shall pay the same accordingly either through the hands of the headmaster or headmistress, or directly, as they think best."

(To be continued.)

INTERNATIONAL EDUCATIONAL CONGRESSES AT THE PARIS EXHIBITION.

(FROM OUR SPECIAL CORRESPONDENT.)

IT is to be regretted that more English teachers have not found their way during the holidays to the Paris Exhibition. They themselves, however, have been the chief sufferers, for not only have they missed the opportunity of seeing the most marvellous and instructive display of progress in the different branches of human activity which has ever been brought together, but they have also lost a unique chance of studying the educational movements in different countries. This chance has been offered them not only by the Educational sections of the Exhibition—which few experts have visited without carrying away fresh knowledge and new ideas—but by the series of international educational congresses organised by the French authorities. Even national modesty, and the fear that—considering the very slender resources which the country had placed at the disposal of the Education Committee of the Royal Commission—the British Educational Section could not possibly rival those of other countries which take a higher view of the influence of the school on national prosperity, cannot be accepted as a valid excuse for their absence. Or, at any rate, it cannot be accepted as sufficient since the awards of the International Juries, placing the section of Great Britain above those of all other countries except France, the United States and Russia, were publicly announced. But whatever the causes, from all accounts our countrymen were in as great a minority at the Congresses as at any former international educational meetings which have been held in foreign towns. Strange to say, they were fairly numerous at the Congress on Modern Language Teaching, though this was held in the last week in July, when all English schoolmasters had very good reasons for remaining at home.

This Congress was probably the most useful and successful of the series. As might have been expected, the chief interest centred in the section which confined its attention to the purely pedagogical aspects of the subject, the meetings in adjoining rooms, where such questions as the teaching of modern languages in commercial and technical schools and international correspondence were discussed, being very sparsely attended. In spite of the terrible heat, however, a large number of persons followed the debates of the pedagogical section, and the energy they displayed was, to say the least, remarkable. It was not, however, surprising when the fact is considered that the leading supporters of the classical and the "new" or "direct" method were brought face to face. The classical method was ably and eloquently defended by M. Cohn—who has done much for the teaching of French in the United States—and Herr Winkler. MM. Passy and Schweitzer were the chief French exponents of the direct method, and they were ably supported by such well known Germans as Directors Walter, Wendt and Klinghardt, and by Miss Brebner. The official British representatives were Messrs. Strong and Redgrave, neither of whom took a part in the discussions. What most struck an Englishman at this Congress was the extraordinary advance which the direct method had made on the Continent.

There is little doubt that towards the end of the meeting many members who were formerly undecided had been converted by the arguments of its supporters. This was, doubtless, in no small degree due to the lessons given to classes before the audience by teachers representing the different varieties of this method. Indeed, when it came to voting the resolutions, it was clear that the majority of the meeting was strongly in favour of "reform," but was saved, after several resolutions had been passed in this sense, from further committing itself by M. Sigwalt, who carried a proposal that "in the interests of the liberty of the profession the meeting should abstain from recommending any method." This was a somewhat extraordinary procedure and met with strong protest. At the close of the Congress, Director Walter called a meeting of those who were particularly interested in the direct method. This meeting, presided over by Mr. Fabian Ware, was well attended and exceedingly useful, confining its attention exclusively to the practical side of the method. Particular interest was shown by the audience in MM. Passy's, Walter's and Klinghardt's explanations of the practical application of Phonetics to modern language teaching. In connection with the whole Congress the tendency must be noticed to insist on teaching foreign languages at the earliest possible age. M. Passy and Mr. Fabian Ware were almost alone in opposing a resolution that modern foreign languages should be taught in the lower classes of the primary school. Their plea that the mother tongue should supply all the linguistic training necessary for younger pupils met with no support from those teachers who believed that the interests of their special branch would best be promoted by early specialisation.

The monster Primary Congress—the different sections united formed an audience not unworthy of the grand amphiteatre at the Sorbonne—owing to clever organisation got through a large amount of solid work under its eminent president, M. Greard, Vice-Rector of the Academy of Paris. Messrs. Pooley and Dunn were the official representatives of Great Britain; but, in spite of reduced railway fares and special arrangements for boarding and lodging foreign teachers at the merely nominal cost of 3 francs a day, the Congress appeared to have but little attraction for our primary teachers. Of the various sections the most popular appeared to be those which dealt respectively with the teaching of domestic economy and moral education. Our large School Boards have little to learn from France in the organisation of domestic economy classes, as is evident from the work which the London School Board has exhibited in the British Educational Section at the Exhibition. But it is interesting to notice what importance the International Congress attached to the training of the girls of the working classes in all things appertaining to housekeeping, and above all to the need of a very different training for the teachers of domestic economy in the normal schools and training colleges. The debates on moral education were particularly interesting for those who have watched the attempt to import moral instruction in the French State schools, and have followed M. Buisson's admirable lectures on the subject delivered at the Sorbonne during the second term of the present year. We are, perhaps, justified in thinking that the question came to the front owing to the feeling in France that the attempt to establish a non-religious basis for moral instruction had not proved a great success. Such, at any rate, was the view of a clever and eloquent young "Sulpicien," who won the respect of all present by the manner in which he advocated the ideas of his brother clergy.

Among the other speakers—reflecting the views of the majority opposed to any form of clerical interference—may be mentioned MM. Devinal, Comte and Payot. Mlle. Meyer, evidently a young enthusiast, argued with great sincerity and eloquence for the suppression of all prizes and punishments, and, carrying her ideas to their logical conclusions, condemned even the classification of pupils in order of merit. This speaker was true to her ideal in her own particular work, and the general opinion of the meeting seemed to be that, difficult as such sweeping reforms would be to carry out in the immediate future, every effort should be made towards their realisation. The practical results of this discussion may not have been great, but it will doubtless do much to stimulate the zeal of all who were present, and above all to impress on them the need, to use M. Comte's words, of basing the moral education of each child on constant observation of his psychological peculiarities. A large number of members responded to the invitation of Mr. Fabian Ware to visit the British Educational Section, where they were particularly interested in the Hon. Lyulph Stanley's account of the work of the London School Board.

The Secondary Education Congress was smaller, but, thanks to M. Croiset, its excellent president, the discussions were of a high order and particularly useful and practical. In conjunction with the Superior Education Congress it dealt with the question of University Extension, and among the subjects which came within its own special province were "The Social Rôle of Secondary Education," "The Autonomy of Secondary Schools," "The Training of Teachers," and "The Initiative of Pupils."

The Hon. W. N. Bruce, who was present at all the meetings as official English delegate, invited the British members to tea at the Exhibition during the course of the Congress, when a visit was paid to the chief education sections.

Among the points raised in the discussion which may prove of chief interest to English readers may be noticed the main object of secondary education, whether it were to impart a general culture or the "scientific spirit." The utilitarian aim, as advocated by those educationists who place their faith in early specialisation, did not occupy the attention of the meeting, which ultimately expressed itself in favour of a compromise between culture and the scientific spirit. The Hon. Lyulph Stanley took a leading part in this and other discussions. On the question of the social *rôle* Mr. Fabian Ware protested against the statement in M. Max Leclerc's report that "in England even the word 'secondary education' had been turned from its true sense, since it does not embrace the *public schools*—intended to form *gentlemen*, and distinct from *secondary schools*, where the middle classes are educated."

The report of M. Th. Beck on the development of the personality and initiative of pupils was full of valuable suggestions. Indeed, so many subjects were discussed at this Congress, and so many different opinions were expressed by the representatives of various countries, that it is impossible to deal with them here, but for this very reason the official report of the Congress may be strongly recommended to all secondary teachers in England. Two other points only can be mentioned, the disinclination of the French to recognise manual training as an integral part of secondary education, advocated particularly by the American and English representatives, and the views, not all favourable, as to the advantages of the system of "International Correspondence," which owes its past success almost entirely to the organising ability of Prof. Hartmann, of Leipzig. Mr. Stead, of the *Review of Reviews*, arranged a small private meeting to consider this question.

The Congress on Higher Education, which was unfortunately proceeding at the same time as that on Secondary Education, devoted a great deal of attention to University Extension. Naturally England had a good deal to say on the matter, and was represented at the Congress by Sir Richard Jebb, Mr. Hartog and Dr. Kimmins. These gentlemen each read papers. Mr. Marriott and Mr. Michael E. Sadler, who were unable to attend, sent reports. Sir Richard Jebb and Mr. Hartog both laid stress on the part which university extension may play in connection with technical education, and the latter's paper was peculiarly interesting in its references to the work which had been carried on among primary teachers by the Victoria University Extension system. It was evident that the future of English university extension lay partly in the distinctly social work of the French "Universités Populaires" (ably described by M. Gabriel Séailles), but even more in the provision of special lecturers and teachers for public institutions and schools. This Congress was divided into seven sections (Social Science, Medicine, Fine Arts, History, Geography, Philosophy and Philology), in each of which many reforms were suggested and debated.

The Technical Educational Congress was attended by a large number of influential persons and teachers from Great Britain, but perhaps it was the least interesting of the Congresses for those who had attended former international meetings on the same subject. There were many excellent speeches, the best of which was probably that of M. Millerand, Minister of Commerce and Industry, who showed a grasp of educational principles which some of our own Ministers might emulate without danger to the country. It was a pleasure to listen to Mlle. Malmanche inveighing against the evil of examinations in the Commercial Section, and to hear M. Jules Siegfried once more express his admirable opinions on commercial education; it was also gratifying to find Sir Philip Magnus again explaining our complicated system of technical education to the bewildered foreigner, but in all this there was little that was new. There was probably no Englishman present who did not know all about foreign technical education and the shortcomings of England, and exactly where reform is needed. Probably, if each of the specialists had brought five of the British public with him to visit the French schools thrown open to the Congressists, more good would have been done. Mr. Fabian Ware, at the close of the Congress, arranged a visit of the British members to the magnificent French Technical Education Section of the Exhibition, where the party was received by M. Jacquemart, one of the French inspectors-general, who spent two hours explaining the organisation and programmes of the schools exhibiting.

Space prohibits any account of the Congress on Physical Education and the Teaching of Drawing, both of them well attended and very successful; but I cannot close without a word of reference to the hospitality which has been extended to the foreigners visiting the Congresses. Except during the period of mourning for the King of Italy, invitations have poured in upon the Congressists—receptions at the Elysée and various Ministries, gala performances at the Opera and entertainments by various literary, artistic and scientific societies, to say nothing of free admission to many of the "side-shows" of the Exhibition. In short, anyone visiting the Exhibition had an infinitely better time as member of an educational congress than as a private individual. Perhaps on another occasion there will be more English recipients of such lavish hospitality.

Imitation of New Patterns.—There is only one way to improve ourselves, and that is by some of us setting an example which the others may pick up and imitate till the new fashion spreads from east to west. Some of us are in more favourable positions than others to set new fashions. Some are much more striking personally and imitable, so to speak; but no living person is sunk so low as not to be imitated by somebody. Thackeray somewhere says of the Irish nation that there never was an Irishman so poor that he didn't have a still poorer Irishman living at his expense, and surely there is no human being whose example doesn't work contagiously in some particular. The very idiots at our public institutions imitate each other's peculiarities.—Prof. James in "Talks to Teachers on Psychology" (Longmans).

A TEACHER'S LIBRARY OF PURE MATHEMATICS.

By G. B. Mathews, M.A., F.R.S.

The list of books at the end of this article is necessarily very imperfect, and it will be well to state the restrictions under which it has been compiled. The range of subjects considered has been practically confined to arithmetic, algebra, Euclid, geometrical and analytical conics and plane trigonometry; and, with one exception, all the works are written in English. At the same time, an attempt has been made to give the list a representative character by including not only mathematical treatises, but works dealing with the teaching and history of the subject, as well as a few others of a more general kind.

I confess that I have no great faith in works on pedagogy, so far as my experience goes; but I have included Professor Smith's work because it seems to me to be, on the whole, very sensible, and likely to be of real use by its negative as well as by its positive precepts. It is free from gush, and the author is not blinded by attachment to the fads of a special system.

Some knowledge of the history of mathematics is extremely valuable to a teacher. I have chosen Cajori's book because it has been written with special reference to the educational aspect of the subject, and contains very instructive examples of ancient and mediæval methods of calculation.

Of the five books under the heading of "Geometry" the first is an elementary treatise by an author unfettered by the Euclid tradition and taught by Continental methods. Casey's "Sequel" is the work of an original geometrician not unworthy of being compared with Steiner in some respects; for this reason, it is more attractive than most works of the kind. Taylor's "Conics" contains a valuable historical introduction and a very elegant treatment of the metrical properties of the curves; the projective properties are also considered, but not in the most direct and natural way. For the projective theory Mr. Third's book forms a really admirable introduction. Cremona's "Elements" includes all the important projective properties of conics, and is very clearly written. Perhaps the best treatise on this subject is Reye's "Lectures on the Geometry of Position," which has been recently translated into English by Professor J. F. Holgate.

Although there are numerous good English class-books on arithmetic, there are none which deal with the subject in a really scientific way. As an exposition of first principles, Tannery's treatise is infinitely superior to any other I have ever seen; at the same time, it is written in an attractive way, and is anything but dry. It is unnecessary to say anything about Chrystal's "Algebra" and Hobson's "Trigonometry," which have clearly established themselves as the standard treatises. I should have liked to add Chrystal's smaller "Algebra," which an independent work, and in some ways (I think) superior even to the larger book, so far as its range extends. I have included Hayward's treatise in this section because it is a useful prelude to vector analysis. Although it is doubtful whether vector analysis will achieve all that some of its advocates appear to expect, an acquaintance with its methods is of great service in many ways.

Salmon's treatise on Analytical Conics still seems to me far superior to any other; indeed, it is difficult to overestimate its merits. It never fails to charm a capable student, and the most expert mathematician can always read it with delight.

The "Miscellaneous" section is not so large as I should like, but the limit of expenditure prevents me from adding to it. Ball's "Recreations" is similar to the well-known "Récréations Mathématiques" of Lucas, and gives a popular account of famous mathematical problems, amusing mathematical puzzles, and so on. Clifford's book is a brilliant and instructive discussion of some of the first principles of mathematics.

I have made no attempt to square my accounts. Allowing for discount, the books in the list, if bought new, would cost about £5 2s. 6d. Several of them could be easily obtained second-hand in good condition at half-price, or less.

One miscellaneous item I much regret having to exclude, namely, a second-hand copy of the "Penny Cyclopædia." This costs 15s., or rather more, according to its condition. Most of the mathematical articles were written by De Morgan, and are of permanent value, although, of course, some would admit of expansion with advantage. Besides the strictly mathematical articles, there are biographies of mathematicians. The abridged reprints of the "Cyclopædia" are inferior to the original.

While preparing this article I read the corresponding one on English History in The School World for September, 1899. It will save space if I say that the introductory remarks made there on pp. 326-7 apply equally well, *mutatis mutandis*, to the subject of mathematics. Unless a teacher extends his reading considerably beyond what he has to teach, and seriously studies the history and development of his subject, he cannot produce the best results. It is important, too, that he should continue to *learn*, because in this way he is reminded of a learner's difficulties.

List of Books.

		s.	d.
I. Pedagogy.			
Smith (D. E.), "The Teaching of Elementary Mathematics" ...	Macmillan (*net*)	4	6
II. History.			
Cajori (F.), "A History of Mathematics"	Macmillan (*net*)	14	0
III. Geometry.			
Henrici (O.), "Congruent Figures"	Longmans ...	1	6
Casey (J.), "Sequel to the First Six Books of Euclid"	Longmans ...	3	6

		£	s.	d.
Third (J. A.), "Projective Geometry of the Straight Line and Circle"	Blackwood		3	6
Taylor (C.), "An Introduction to the Ancient and Modern Geometry of Conics"	Bell		15	0
Cremona (L.), "Elements of Projective Geometry"	Clarendon Press		12	6

IV. Arithmetic and Analysis.

		£	s.	d.
Tannery (J.), "Leçons d'Arithmétique théorique et pratique" (Paris: A. Colin et Cie., 5½ fr., say)			5	0
Chrystal (G.), "Algebra" (two vols.)	Black	1	2	6
Hobson (E. W.), "Treatise on Plane Trigonometry"	Cam. U. Press		12	0
Hayward (R. B.), "The Algebra of Coplanar Vectors and Trigonometry"	Macmillan		8	6

V. Analytical Geometry.

		£	s.	d.
Salmon (G.), "Treatise on Conic Sections"	Longmans		12	0

VI. Miscellaneous.

		£	s.	d.
Ball (W. W. R.), "Mathematical Recreations"	Macmillan (*net*)		7	0
Clifford (W. K.), "The Common Sense of the Exact Sciences"	Kegan Paul		5	0
	Gross Total	£6	6	6

WHAT IS TECHNICAL EDUCATION?

As to what is meant by technical education there is the greatest confusion abroad. In reviews, speeches, articles, and letters to *The Times*, the expression is to be found, but used with meanings so different and, it may be added, in a sense usually so erroneous, that the amount of profitless discussion which has taken place during the last two years cannot be a matter of surprise. It is true that committees appointed by county and borough councils from one end of the country to the other have been for ten years administering schemes for providing instruction in subjects approved as "technical" by the Department of Science and Art. An attempt has been made, moreover, to define what may be legally included in a scheme of technical education. The Technical Instruction Act, 1889, lays it down, in Section 8, that "the expression 'technical instruction' shall mean instruction in the principles of science and art applicable to industries, and in the application of special branches of science and art to specific industries or employments. It shall not include teaching the practice of any trade or industry or employment, but, save as aforesaid, shall include instruction in the branches of science and art with respect to which grants are for the time being made by the Department of Science and Art, and any other form of instruction (including modern languages and commercial and agricultural subjects), which may for the time being be sanctioned by that Department by a minute laid before Parliament and made on the representation of a local authority that such a form of instruction is required by the circumstances of its district."

"The expression 'manual instruction' shall mean instruction in the use of tools, processes of agriculture, and modelling in clay, wood, or other material."

The annual reports of numerous technical instruction committees show that in the interpretation of this official definition the elasticity allowed to the words "any other form of instruction" is the most notable characteristic of the results of the only important attempt to officially answer the question we have set ourselves. Every branch of knowledge, except perhaps Greek, has in some county or other been classified as technical. History becomes "technicalised" by placing before it the word "commercial." Correspondence, arithmetic, most European languages, geography, and many other subjects are supposed to be transformed by the same simple process.

So great has the confusion become that some distinguished champions of what they themselves vaguely speak of as "secondary" education have shown a disposition, in their speeches and newspaper contributions, to use the unfortunate expression "technical education" as synonymous with elementary instruction in science and art.

It would seem to be desirable, therefore, to briefly refer to some of the circumstances which gave rise to the demand for the kind of education subsidised by the "whisky money" and by local rates. It is depressing to think how slowly the world moves on to sanity. Men of science have been insisting upon what must be the fundamentals of any effective system of technical education ever since the early seventies. In and sometimes out of season they have clearly laid down certain truths which have never been refuted, and though, perhaps, for the sake of completeness, all these might with advantage be recapitulated, it must here suffice to call attention to the leading ideas which have guided the advocates of a less bookish education for our foremen and workmen.

Numerous causes conspired together to make some change in the education of the nation necessary. Important among these factors may be mentioned the disastrous effects of the commercial competition of more suitably educated foreign rivals and the inadequate preparation for future work which young men destined for certain professions, notably that of medicine, received at school. Other causes which will occur to the reader need not be reviewed. Eventually it was to some extent recognised that practical instruction, both in science and art, was a necessary part of any education, whether primary or secondary. Not all at once recognised universally, it is true. But the foundation of the Department of Science and Art in 1856 comparatively soon covered the country with science and art classes, in which the workman who cared to improve himself might become acquainted with the principles of science utilised in the industry to which he was attached, or familiarise himself with the canons of art which would enable him to produce elegant articles suitably adapted to the purposes for which they are intended. The elementary schools, which, after the passing of the Education Act of 1870, were to be found everywhere, were in their turn influenced. Before long, by object lessons and in the higher standards by more formal instruction, the scholars of many primary schools were introduced to the elementary facts of science. Though influenced more slowly, and only after showing much resistance, secondary school authorities are beginning to see that those of their pupils who are turned out devoid of any acquaintance with scientific truths are at a disadvantage with competitors from elementary schools and science classes whose faculties have been better trained, and who have learnt habits of accuracy and know how to tackle a new problem by the methods of science.

But this partial recognition of the necessary part which science and art must take in any form of education has resulted in the appearance of several dangers which seem to grow in magnitude. Englishmen travelling in Germany and other countries, and trying to combine the *rôle* of investigator and tourist, have been greatly impressed by the splendidly equipped technical schools which are so numerous on the Continent. Returning home, they have preached the necessity for more technical schools in this country as the only way to stave off the commercial ruin of the nation. Their well-meant efforts have proved astonishingly successful. Every town of any size now has its well-built and generally profusely furnished technical school. This has been the state of things for several years, and it is beginning to be possible to estimate with some approach to accuracy the success of the efforts which have been made with no small expenditure of trouble and money.

It must be said at once the results are disappointing. It is beginning to be seen that other things besides good buildings and a plentiful supply of apparatus are necessary. It is well nigh impossible to carefully study the report of the work of any large technical institute and not come across a statement, by the principal or one of the teachers, concerning the deplorable state of incompleteness of the general education of students presenting themselves in the technical classes. Students anxious to study mechanical engineering are found to have no knowledge of mathematics and but a slight acquaintance with elementary arithmetic. Only a student here and there comes ready to interpret a simple plan or elevation. The classes in the various branches of electrical science include students ignorant of even the simplest chemical and physical laws, and similar deficiencies are reported in other classes.

More than this, a closer acquaintance with the educational systems of Germany and other continental countries reveals that their commercial success is, as many consular and similar reports show, more to be attributed to the thoroughness of the education received by young men before the technical school is reached than to the completeness of the instruction given in technical classes, and it is in this direction the answer to the question, "What is technical education?" begins to be approached.

Technical education is not merely instruction in elementary science and art, nor in any single one of the multitude of subjects for which county councils cater. It is only possible to proceed with what is properly to be considered as technical education after certain subjects which must be regarded as fundamental and absolutely essential have been thoroughly mastered. Hitherto we have been building our educational house upon the sands. There has been too much hurry, too great a disposition to take short cuts which lead nowhere, and the sooner we go back and begin to work intelligently the more likely are we to arrive at satisfactory results and a practical return for the large sums of money expended and immense stores of energy absorbed in our attempts to manufacture intelligent workmen.

The first lesson which must be learnt—not the first proposition which must be agreed to, for that stage was reached long ago, but the first lesson which must be learnt in such a way that it is translated into action by our schoolmasters and technical institute authorities—is that every boy, whatever his future may be, must learn the fundamental subjects which constitute the basis of all forms of human activity. Reading, writing, and arithmetic come first, and must be made part and parcel of every boy; this is far from being so at present. The power of simple expression should follow. Only a boy here and there can write down in clear, simple language what he thinks on any subject. That they may think at all on any subject our scholars must have been introduced to what are commonly referred to as "ordinary English subjects." In addition to this the principles of elementary physics and chemistry must have been practically studied in such a way that they have *soaked in* through every faculty. The mere learning by heart of definitions and formulæ is worse than useless. Finally, every boy must have learnt to draw, to be able to express by an intelligible sketch what he is picturing in his mind, and if to this is added a training of the hand and eye, by means of manual work, so much the better.

Such is the irreducible minimum in the way of preliminary equipment necessary before any system of technical education in any way likely to ultimately benefit those by whose hands our manufactures are produced, or those through whose agency such goods are distributed, can be satisfactorily developed. It is not for one moment contended that the subjects enumerated constitute a complete system of education, elementary or secondary. Certain omissions in the direction of instruction in morals are immediately evident. The most perfectly equipped workman, from a technical point of view, will not help to build up a stable social fabric unless, to his intelligent knowledge of his handicraft, he also adds a working acquaintance with those moral laws after which all society is fashioned.

When viewed from the standpoint of the secondary school, the education necessary for a technical student, which expressed in its lowest terms is given above, seems at first sight even more meagre. The secondary school pupil should naturally go much farther, since in later life his work will be of a higher order. But he, too, before proceeding, must be sure of the fundamentals. Having mastered the use of the tools of learning, he may with advantage proceed to the study of French and German, and certain other subjects which everybody associates with a secondary school curriculum. But there must of necessity be a division of the ways after the alphabet of instruction, for so the simple modicum of knowledge described as fundamental must be considered, has been mastered. The boy destined for the learned professions needs a training widely separated from that suitable for his companion who is to proceed, in whatever capacity, to the workshop or warehouse. It is the latter youth who should be captured by the technical school.

And in the technical school itself there must be differentiation. Some few only can aspire to be directors of industry; and the boy from a secondary school whose general education, having been extended over more years, is broader and more thorough, will be able to undertake courses of study for which the boy from an elementary school is less fitted, even if he had the means and leisure to indulge in an extended training in the technical school.

Difficulties now begin to disappear. Technical education, the work of the technical institute, will go on satisfactorily enough if pupils prepared in the way described are forthcoming. But a point which is not sufficiently insisted upon must not be lost sight of. In convincing the opponents of technical education among the so-called "practical" men that their unbounded belief in rule-of-thumb methods was misplaced, the advocates of improved teaching have gone too far. That the sole object of technical education is the instruction of our workmen in scientific ways of doing their work, and the improvement of our manufacturing processes and distributing agencies, is often ignored. The methods of instruction which have grown up are more suitable for the production of teachers of pure science than for the fashioning of properly educated artisans and commercial employés. After all, "technical education," when expressed in everyday English, becomes "the teaching of handicrafts," and the insertion in the official definition to which attention has previously been called of the words, "It (technical instruction) shall not include teaching the practice of any trade or industry or employment," has done a great deal to produce a divorce between the teaching of the technical institute and the requirements of the workshop and warehouse. In avoiding Scylla the responsible authorities have encountered Charybdis. The time seems now to have arrived when every effort should be made to include the teaching of the rudiments of physics, chemistry, and mathematics in the ordinary education of every one of our future workers, and to secure the inclusion of manufacturing and commercial experts on every technical education committee, to ensure the modification of the instruction imparted in all technical schools that it may have its proper function—which is the scientific teaching of handicrafts—and the intelligent equipment of those who are to be concerned in the distribution of our manufactures.

OBSERVATIONAL ASTRONOMY.

A SERIES OF NOTES UPON THE POSITIONS AND APPARENT MOTIONS OF CELESTIAL BODIES.

By R. A. GREGORY, F.R.A.S.
Professor of Astronomy, Queen's College, London.

III.

THE ROTATION OF THE EARTH. DAY AND NIGHT.

Determination of true North and South by the Sun.—Fix a rod upright in a place where the sun can shine upon it. Two or three hours before midday observe the direction and length of the shadow of the rod, and by means of a piece of string fitting loosely upon the rod draw an arc of a circle having a radius equal in length to the shadow (Fig. 1). In the afternoon, when the shadow has the same length as in the morning observation, again mark its direction. A line bisecting the angle between the directions of the morning and afternoon shadows of equal length is a true north and south line, and if it could be continued in both directions it would pass through the north and south poles. Notice that the length of the shadow decreases until midday, and then increases until the sun sets. The shadow is shortest when it lies due north and south, that is,

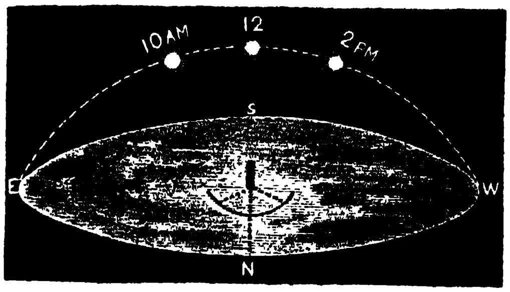


FIG. 1.—Determination of Meridian Line by Method of Equal Altitudes of Sun.

when the sun reaches its highest point for the day.

Experimental Illustration of the Sun's Diurnal Motion.—The observations of the change of position of the shadow of a rod upon which the sun is shining must extend over several hours, but the fact they illustrate can be shown by fixing a rod upright upon a table and using a small lamp to represent the sun. The lamp should be moved in an arc as the sun appears to do, that is, it should be steadily lifted above the edge of the table representing the eastern horizon to the south, and then down towards the opposite edge. The change in direction of the shadows of objects during the day can thus be imitated. The method of finding a north and south line by bisecting the angle between two shadows of equal length before and after noon can also be demonstrated.

Length of Apparent Solar Day.—Notice the time when the shadow of an upright rod lies due north and south on any day. Make the same observation on the following day and several other days. In this way find the number of hours between two successive appearances of the sun due south. The result gives the length of the *apparent solar day* at the time of year in which the observation is made.

Length of Sidereal Day.—Fix the instrument already described (p. 292), or a similar instrument, so that the vertical circle lies in a north and south plane, and therefore any object can be seen through the tube, or along the pointer, when the object is in the south. Observe a bright star through the tube and notice the time when the star is at the centre of the field of view. Let the instrument remain fixed in this position, and again observe the time at which the star occupies the same place in the field of view on the following evening, or several evenings later. From the observations determine the interval of time between two successive appearances of the star in the same part of the sky, that is, the length of a *sidereal day*.

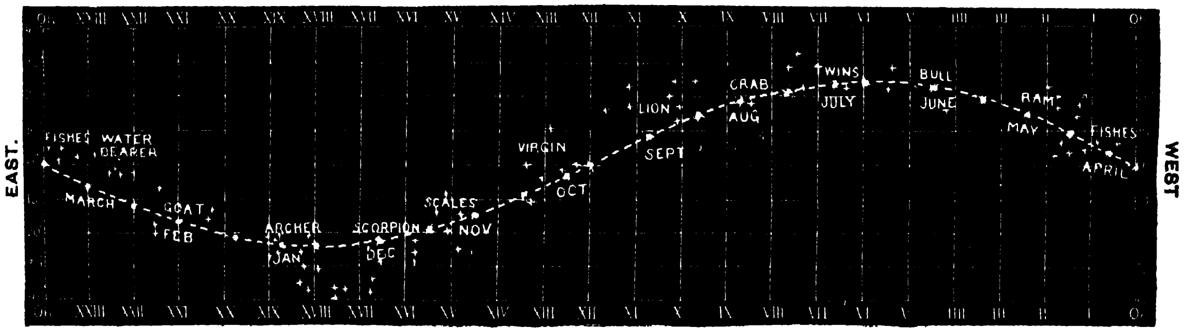


Fig. 2.—Apparent Annual Movement of the Sun upon the Celestial Sphere.

Rotation of the Earth.—Place a small globe upon a table. Stick a pin radially into the globe in any latitude. Rotate the globe on its axis so that it moves in the opposite way to the motion of the hands of a watch, when viewed from above. Notice that the pin is turned in succession towards different objects upon the walls, floor and ceiling of the room, which may be regarded as stars on the celestial sphere. If the globe rotated at a uniform rate, the period of rotation could evidently be determined by observing the interval between two successive appearances of any one star in the same position as seen from one place.

Day and Night.—Light a lamp to represent the sun, and place the globe near it. One half of the globe is illuminated, and the other hemisphere is in darkness. Rotate the globe as before; different parts are thus successively turned into the light and darkness. The rising and setting of the sun can thus be shown to be explained by the rotation of the earth on its axis from west to east.

THE SUN'S APPARENT ANNUAL MOTION AMONG THE STARS. THE ECLIPTIC. THE ZODIAC.

Apparent Eastward Motion of the Sun.—Notice for several weeks or months any conspicuous stars or constellations visible in the western sky about an hour after sunset. Constellations which are high above the sun at the beginning of the observations will gradually appear lower and lower, and will finally set with the sun.

Notice the constellations visible when looking south at a particular hour at different times of the year. The constellations visible at, say, ten o'clock at one time of the year will be found in the south-west at the same time about six weeks later, and will be setting at that time three months after commencing the observations.

Determination of the Ecliptic.—Obtain a piece of squared paper and divide it in the way represented in Fig. 2. The middle horizontal line represents the celestial equator, and the lines north and south of it are "parallels of declination." The twenty-four vertical lines should be numbered to represent the twenty-four hours of "right ascension" upon the celestial sphere.

The table given on the next page shows the right ascension and declination of the sun on the 1st and 15th of each month. Make a mark upon the chart to locate each position shown in the table. Draw a curve through the points; the curve thus found represents the apparent path of the sun among the stars—that is, the *ecliptic*.

Constellations Traversed by the Sun.—Notice in Fig. 2 the constellations lying in the neighbourhood of the ecliptic. Make a table showing the constellation behind the sun in each of the twelve months of the year. In what months is the sun in the constellations Pisces (Fishes), Cancer (Crab), and Capricornus (Goat)?

Constellations visible at different Times of the Year.—Taking the space between two successive vertical lines in Fig. 2 to represent an hour, the constellations any number of hours east or west of the sun at any time of year can be seen. Find the zodiacal constellation which sets about three hours after the sun in May and November. Also find the constellation which is twelve hours distant from the sun at the present time of year. This constellation is due south at midnight.

Explanation of Sun's Apparent Annual Motion.—Place a lamp upon a table to represent the sun, and a small globe near it to represent the earth. Various objects on the walls, floor and ceiling of the room may be regarded as stars. Move the globe around the lamp, and notice that the objects upon which the lamp, as seen from the globe, is projected, vary with the position of the globe. In taking the globe completely round the lamp in one plane, the lamp appears to make a complete circuit of the room as seen from the globe. This apparent change of position caused by the revolution of the globe illustrates the apparent annual motion of the sun among the stars.

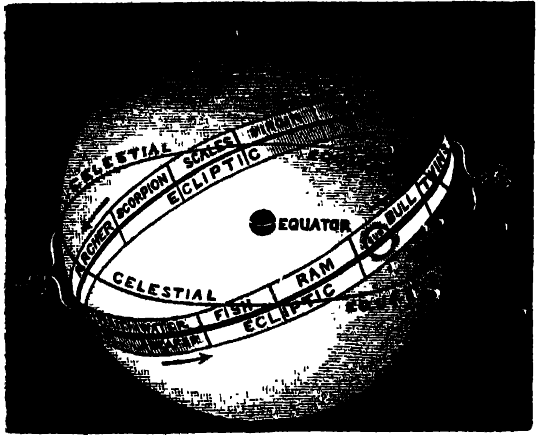


FIG. 3.—Relation between the Celestial Equator, the Ecliptic, and the Signs of the Zodiac.

Position of the Ecliptic.—Remembering that the position of any celestial object can be defined by means of the co-ordinates, "Declination" and "Right Ascension," just as definitely as the position of a point on the earth can be defined by latitude and longitude, a method of determining exactly the apparent annual path of the sun is easily understood. All that it is necessary to do is to determine the declination and right ascension of the sun a number of times throughout a year and to plot the points thus obtained upon a chart having lines representing declination and right ascension drawn upon it. The following table shows the right ascension and declination of the sun at noon at the beginning and about the middle of every month:—

Date.	Right Ascension of Sun at Noon.		Declination of Sun at Noon.		Remarks.
	h.	*m.*			
Jan. 1st.	18	48	23°	1'S.	
,, 15th.	19	47	21°	10'S.	
Feb. 1st.	20	58	17°	9'S.	
,, 15th.	21	54	12°	44'S.	
March 1st.	22	57	7°	17'S.	
,, **21st.**	0	1	0°	0'	**Spring Equinox.**
April 1st.	0	45	4°	51'N.	
,, 15th.	1	36	10°	3'N.	
May 1st.	2	36	15°	19'N.	
,, 15th.	3	31	19°	3'N.	
June 1st.	4	39	22°	10'N.	
,, **20th.**	5	58	23°	27'N.	**Summer Solstice.**
July 1st.	6	44	23°	4'N.	
,, 15th	7	41	21°	25'N.	
Aug. 1st.	8	48	17°	50'N.	
,, 15th.	9	41	13°	50'N.	
Sept. 1st.	10	44	8°	1'N.	
,, **23rd.**	12	3	0°	0'	**Autumnal Equinox.**
Oct. 1st.	12	32	3°	29'S.	
,, 15th.	13	23	8°	49'S.	
Nov. 1st.	14	28	14°	42'S.	
,, 15th.	15	25	18°	42'S.	
Dec. 1st.	16	33	21°	56'S.	
,, **21st.**	18	1	23°	27'S.	**Winter Solstice.**

When these values are plotted upon a chart, a curve is obtained like that in Fig. 2. This curve evidently represents the apparent annual path of the sun, that is, the ecliptic. It will be seen that the sun is north of the celestial equator for about six months during the year and south of it for the remaining six months.

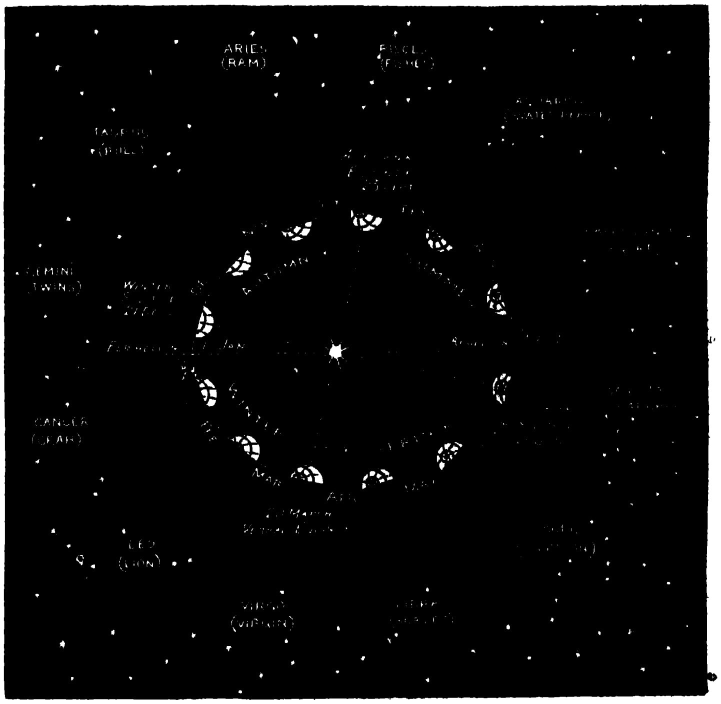


FIG. 4.—To explain how the Apparent Annual Movement of the Sun through the Constellations of the Zodiac is due to the real Movement of the Earth around the Sun

Much can be learnt from the table and Fig. 2. Consider first the column of right ascensions at noon. On March 21st the sun is at the starting point. It apparently moves eastward on the celestial sphere at the rate of two hours of right ascension per month, and thus moves through the whole twenty-four hours in twelve months. Now look at the column of declinations. On March 21st the sun is on the celestial equator. From that date it moves northwards, and on June 20th reaches its greatest northerly position, viz., about 23½° N. From June 20th the north declination decreases, until on September 23rd the sun is again on the Equator. From September 23rd the sun moves southwards, and on December 21st reaches its most southerly position, viz., about 23½°. It then returns to the equator, and reaches the starting point on March 21st.

The Apparent Eastward Motion of the Sun. In consequence of the apparent eastward motion of the sun among the stars, different constellations are visible at different times of the year. The sun's apparent path can be precisely traced throughout the year in the manner already described; therefore, knowing the position of the sun upon the celestial sphere at any time, the stars or constellations which form the background are also known, for they are fixed points upon the celestial sphere. These groups of stars which lie in the neighbourhood of the sun's track—the ecliptic—are known as zodiacal constellations, or constellations of the **zodiac,** the zodiac itself being a zone extending completely round the heavens between the limits of 9° or 10° north and south of the ecliptic. The positions of the signs of the zodiac upon the celestial sphere are shown in Fig. 3. The next illustration (Fig. 4) shows that the apparent annual journey of the sun through the various constellations of the zodiac can be satisfactorily explained by the real motion of the earth around the sun in a year.

Exercises.

(1) Why are the days longer in summer than in winter? Explain the difference noted at these seasons—

(*a*) In the sun's declination.
(*b*) In the places of sunrise and sunset

(2) Give an account of the apparent movements of the stars depending upon—

(*a*) The earth's revolution on its axis.
(*b*) The earth's rotation round the sun.

(3) What difference is observed in the place of the rising and setting of the sun (1) at different times of the year at any place in the British Isles; (2) at the summer solstice in different parts of the northern hemisphere?

(4) At about what time of year were the following lines spoken, referring to the rising of the sun at Rome?—

> Here as I point my sword, the sun arises,
> Which is a great way growing on the south,
> Weighing the youthful season of the year.
> Some two months hence up higher towards the north
> He first presents his fire.
> ("Julius Cæsar," Act II., Sc. I.)

(5) How would you draw a true north and south line by observations of the sun? How could you use such a line in the determination of the length of an apparent solar day?

(6) Describe briefly the sun's apparent annual motion among the stars, and also an experiment explaining it.

PRACTICAL WORK IN PHYSICAL GEOGRAPHY.

A Series of Notes on Experiments and Observations for the new Schedule of the Cambridge Junior Local Examination.

By Dr. A. J. Herbertson, F.R.G.S.

III.—Out-of-door Lessons on Land and Map Reading.

To *Read the Land.*—An excursion should be made to a height near the school from which a good view can be obtained. On the way up the different geographical features should be noted. Among these will, in most cases, be some or all of the following: the river, main stream and tributaries, the region of source, the direction of the mouth, the valley through which the river flows, the effect of the gradual change of the slope of the hill in quickening the current, and perhaps in forming waterfalls, the knolls and hills, the pass or col, the ridge leading to the summit. Note every winding of the road and try to explain it.

From the summit the general lie of the land should be observed, with special attention to the heights and hollows and the courses of the streams. Note the distribution of woods (where deciduous, where coniferous), cultivated and pasture lands, and uncultivated and waste districts of the country (marsh, moor, or scree). Distinguish between the trees forming great plantations, those dotted in clumps above the landscape, and those following the watercourses.

Pick out the villages and towns visible, note their position relatively to the topographical features observed, especially to the streams. Note that most are situated at a confluence, bend, ford, bridge, or at the point where the river enters the plain. See if they are arranged in lines, or more equally distributed over the district. In the former case the explanation may be a line of springs or waterfalls, the geological reason for which might be explained to the elder pupils. Note how the farmhouses and buildings are distributed, and encourage pupils to make rough sketches of the country they see. This will probably be difficult at first for most children; but they can understand and even make a very diagrammatic map. The drawing class might occasionally try to sketch the outlines of the hills instead of copying ingenious intricacies indoors. As the world is three dimensional, it is well to accustom pupils to observe three-dimensional objects.

Pupils should be taught to describe *accurately* and *concisely*, in properly constructed sentences, the country they see around them. The excursions might be looked upon as practical work in connection with the English class, as well as in connection with the Geography class.

To Read the Map.—Take a 1-inch ordnance map (preferably with brown hill-shading, if it can be obtained for that sheet), as well as maps of smaller scales (such as Bartholomew's $\frac{1}{2}$-inch or Philip's or Johnston's $\frac{1}{3}$-inch maps). Examine and compare them with the actual landscape.

First Orient the Map. To find the S., use the Sun. The simple rule is to point the small hand of a watch to the Sun, and when hand and shadow are in one line, to take half the angle this makes with the XII on the watch. This gives the south line. Lay the map with its south side turned to the south. (A compass may be used. The difference between true and magnetic north should be pointed out.)

The map may also be oriented by first finding on it the point where one is, and then some prominent object in the landscape, and so setting the map that the line between these two places coincides with the one between them on the map.

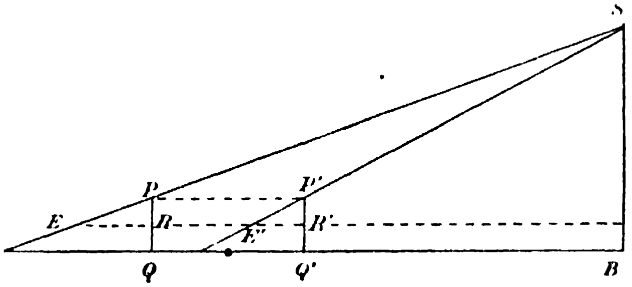


FIG. 1.

Note the scale of the map examined, not only the number of miles to an inch, but the actual fraction which it represents of the real ground. Suppose it is one inch to one mile—*i.e.*, 1 : 63,360 of nature. 1 : 10 of an inch on the map represents 176 yards. Measure 176 yards, and compare it with 1 : 10 of an inch.

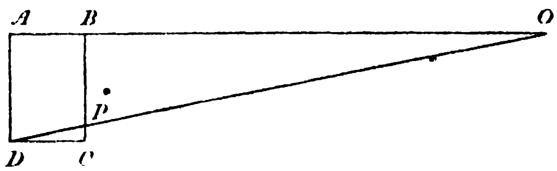
Pick out some of the more prominent features in the landscape—a hill, a church tower, a railway bridge. Get the pupil to say in what direction they lie. Identify the places on the map. Then, by using a circular band on which the cardinal points have been fixed (or a transparent protractor with these points marked, or the compass card), compare the guess of the pupils with the true direction.

Ask the pupils to estimate the distances of these objects from the point of observation. Then let them measure the distances on the map. Calculate from these measurements the actual distances, and compare them with the answers given.

From a point in the plain the heights of different summits and passes should be estimated, and compared with measurements and with the figures given on the map, less the height of the point of observation above the sea.

A simple way of measuring a height is to take a long pole and set it in the ground. Move backwards until a line from the eye, E (Fig. 1), just touches the top of the pole P and the point S of which the height is to be measured. Measure the distance ER from the pole, and the height PR of the top of the pole above the eye. Now move either backwards or forwards in the plane containing pole and summit a convenient number of paces, RR′, and set up another similarly sized pole or reset the old one, and repeat the observation. Draw these two poles, PQ and P′Q′, and the positions of alignment E and E′ at the eye level, on a convenient scale on a piece of paper, and draw a line from the position of the eye through that on the top of the pole in both cases (EPS and E′P′S). The intersection of these two lines, S, gives the position of the summit, and its height, BS, above the base on the same scale, which may be converted into feet.

The distance of an inaccessible object, O (Fig. 2), may be measured as follows: Walk forwards a known distance AB in the line of AO, then a convenient and known distance BC, perpendicular thereto from C; and at right angles to BC move a distance equal to BA. Move a pole P along BC until it lies in the line OD, and measure its distance from C. Then AO = AB + BO, and BO : CD = BP : PC.



If the distance of the summit in the previous example was determined, only one observation from E would be necessary, for the position of S on EP projected and its perpendicular distance above the base could be measured.

Examine all the features studied on previous excursions, and compare them one by one with their representation on the map. Practise pupils in describing features both from the map and from the country. In the former case turn to the country after reading the map; in the latter turn to the map after reading the country.

Excursions may profitably be made to regions which have previously been studied at school on the map, and described in writing by each pupil. On the actual excursion let the description made from the map be very carefully compared with the real landscape, and corrected.

The Study of Geography.—Pure geography, with its placid aloofness and its far-stretching outlook, combined sometimes with a too rigid devotion to the facts and conclusions of strict geographical research, is apt to incline many scientific minds to an admirable, quiet-eyed cosmopolitanism—the cosmopolitanism of the cloistered college or the lecture theatre. It, perhaps, also at times has a tendency to create in purely academic students a feeling of half disdain or of amicable irritability against those who love the science for its political and social suggestiveness and elucidations. Thus there is a possible danger that geographers of high intellectual calibre, with enthusiasms entirely scholarly, may come to underrate nationality and to look upon the world and mankind as the units, and upon people and confederacies and amalgamations merely as specific instances of the general type.—Sir George S. Robertson, K.C.S.I.

INTERNATIONAL CORRESPONDENCE AS AN AID TO LANGUAGE TEACHING.

By NEVILLE W. ROSS, B.A. (Cantab.), B. ès L. (Paris).
Assistant-Master in Dover College.

NOT the least striking peculiarity of French and German boys is the accuracy with which they learn to pronounce a language. While on a visit, a short time ago, to a friend who is rector of a Bürgerschule in North Germany, I had the opportunity of taking some of his classes for a few hours, and I was greatly impressed with the ease and correctness with which the boys and girls of about fourteen years of age were able to read English. Not only did they pronounce the words correctly, but they were able to use them readily in answer to any question asked bearing on the text. This excellence, too, was not merely confined to one or two pupils, but was general, with barely an exception in the whole class. No doubt these good results are chiefly due to the admirable methods adopted in Germany in teaching languages—methods which teachers in England are fortunately beginning to adopt. But whatever method is adopted, I am sure much help might be gained by utilising the system of International Correspondence in our schools.

For the sake of those teachers who are not acquainted with the working of the system, I will state briefly of what it consists. Boys and girls of about the same age and capability are placed in communication with one another, and are expected to exchange a letter at least once a fortnight. The correspondence commences, for instance, in English, and a reply is sent in English, followed by letters in French or German, and so on. Letters can only be sent abroad to school addresses. The correspondents generally correct the letters received and return them.

There can be little doubt of the utility of this system as a means of true education and of acquiring a living language, while it is invaluable for brightening the hum-drum monotony of the usual school exercises and compositions. We all know how hard it is to awaken a boy's interest in cut-and-dried sentences and idioms; he does not seem to realise the fact of their every-day use, of their necessity to express the simplest thought. Only those, however, who have tried this correspondence with their pupils know how those same sentences and idioms seem to become imbued with life and reality to a boy who reads them in a friend's letter. The sort of sympathy which exists between correspondents—especially between boys —impresses the very language in which the thoughts are expressed on a boy's memory. He remembers the thought so expressed because it interests him, and in remembering the idea unconsciously retains the very words. In this way a number of phrases and idioms are gradually acquired without any effort, and, what is more important, they mean more to the pupil than anything learnt in school work.

This almost unconscious acquiring of sentences forms a fair beginning for ultimate fluency in speaking, which can only be attained by learning to think in the language, never by attempting to translate as one speaks. This necessity for trying to think in the language is particularly noticeable when a correspondent's letter has to be answered. The boy has to remember a large number of words and phrases to enable him to produce a sufficiently long letter, and it is all the better if he is too lazy to make a free use of his dictionary and grammar. This sort of letter provides him with a splendid course of mental gymnastics, as the mere fact of having to turn what he wants to say to fit his vocabulary will improve his prose compositions. Again, the letters received contain many ordinary words and idioms which are continually recurring, but which are much less frequently met with in the classical authors he reads in school work. These words become, perhaps, the surest portion of his vocabulary, especially if he brings them to his teacher for explanation. Often boys have asked me whether some ordinary colloquial expression in their letters was the one in general use; thus they become more at home with the language and begin to feel it is real.

It is a common but true saying, that the best education is obtained by travel. It is of the form of travelling in a country to study its language and literature, its people and their customs, that I would say a word in connection with International Correspondence. I think we ought to recognise in it a distinct step in the direction of a more impartial judgment of other nations. A boy has a correspondent, say, in France; what he hears about the place his friend lives in, and of the people he talks about, arouses his interest, and he goes there to pay his friend a short visit.

Even during this short stay he makes a start in conversational French, and obtains a wider and truer insight into the life and customs of the French people than he could otherwise have done. In fact, if we can only make this correspondence a means of drawing other nations nearer to us, and making clearer to us in what they excel, and in what we are deficient, it will stamp the system with a real and lasting value.

The English language was in the past considered sufficient for most foreign business transactions, and other nations acquired it to have dealings with us. This was satisfactory as long as we had undisputed command of the markets. But now that that is no longer the case, it is time we entered into competition with the foreigner on his own lines, and this is more particularly what concerns us here. From learning English for the purpose of trading with us, the foreigner (especially the German) has learnt other languages, and is now pushing his trade all over the world. Whereas we are only half-hearted in our efforts to do the same, and only half convinced of its necessity. We must send our sons who are intended for business abroad to acquire two or three languages. Here, again, the system of correspondence will be found of immense use. It will greatly reduce the sort of objection many Englishmen have to leaving their country for the lengthy stay in a foreign one requisite for learning to fluently speak the language. The first few months of this visit are, no doubt, often unpleasant ones, sometimes even unproductive owing to the difficulty of making congenial acquaintances for the sake of conversation. If the acquaintance is made beforehand, by a year's correspondence, for example, the wrench at leaving school, home and friends is softened, and opportunities for social intercourse and progress in the language invariably follows.

Another point in this connection, and often an important one, is the facility this correspondence affords for becoming acquainted with a suitable family in which to place a boy. The difficulty sometimes experienced in this matter, especially in the case of French families, is often very great, and is frequently overcome by the recommendations of a correspondent.

Objections have of course been raised at different times as to the desirability of introducing the system of International Correspondence into our schools. No doubt the great objection to be found with the scheme is the possible introduction into a school of harmful and vicious ideas, which are considered by some to be the especial property of foreign schools, wherefore some headmasters have felt reluctant to allow the plan to be introduced into their schools. But I venture to maintain that these fears are groundless, even if one admits—which I utterly refuse to do—that the mere fact of the boy being foreign is synonymous with his being vicious. Surely any boy, of any nationality, would be incapable of writing anything harmful to a mere correspondent. The very fact of the acquaintance being only possible through the medium of the pen would make him hesitate to jeopardise its continuance by any hasty word or hint.

A greater danger exists in the possible importation into a school of *illustrated* papers and other pernicious literature. But it seems to me that this can be so easily checked. One need only restrict the sending of letters to school addresses, and *simply* inspect the correspondence before handing it over. I always make it clear to my boys that I reserve the right to open any package I see fit, and I find that they are very pleased if one asks to read their letters. Another precaution against such dangers is a careful selection of those allowed to receive letters. In any case, a refusal to entertain the idea of this correspondence is a very strong attitude to adopt in the matter.

Many teachers, perhaps, would think the system worth a trial if it were not for their doubts as to the possibility of maintaining the boys' interest in the matter. Some boys, of course, get tired of everything; but the greater number soon discover what a charm this letter-writing adds to their school work. The reason is plain. In construing, for instance, the mere fact of running across words which they have become familiar with in their correspondence, and which perhaps they now find have a different meaning there, gives them a curious amount of pleasure. Then, again, they have an object in trying to improve their French or German, viz., to improve on the last letter they wrote to their friend, to be able to ask their correspondent whether he does not understand them better this time. The spirit of sport natural to every boy will maintain his interest by the very attempt to try and beat the last letter he received in style and information. A difficult task, for the French and German boy's letter as a composition wants a lot of beating!

Artificial aids to maintenance of interest may be mentioned: accepting letters written in French or German as an alternative to an expected essay, offering a small prize for the best letter in a form during the term, and so forth. All these, however, I merely mention to condemn as quite unnecessary. To show an interest in their correspondence, to ask occasionally how they are getting on with the acquaintance, to sometimes read a letter aloud to the form, is all that is required to maintain their interest. What an amount of enjoyment, too, the boys get from comparing notes about their different correspondents!

Some teachers have failed to see in the system more than an original and new way for boys with a taste for letter-writing to amuse themselves in discussing games. But surely a periodical interchange of thoughts must eventually exhaust the subject of games, and lead to the discussion of something more solid. I have seen letters of older boys which have contained, not only an exchange of ideas about well-known authors, but have touched on the pleasure to be derived from reading less well-known authors, with offers to lend the works in question. This style of correspondence must appeal to a teacher as a means of promoting the earnest study of a language, and as valuable for those boys who are never likely to go abroad, leading them to look further into the literature of a country under the guidance of a native of it.

In conclusion, I should like to urge all who are interested in language-teaching not merely to weigh the arguments for and against introducing international correspondence, but where opportunity permits, to try it, and see for themselves whether the results justify the permanent establishment of the system into the work of a school.

Modern Language Teaching in Belgium.—The Belgian boy on leaving school has learnt, if his study has been English, to read something of Milton and Shakespeare, Pitt and Burke; he can understand a speech, a lecture or a lesson given in English, provided that the speaker utters his words distinctly and deliberately; he can express his own ideas in English, not, indeed, always very correctly or elegantly, but at least intelligibly, and so as to convey his thoughts with fair accuracy; he does not possess all our idioms, nor all our peculiar turns of expression, but he possesses the material out of which these are formed. English, as learnt by him, has contributed to enrich his intellect with new ideas, new forms of thought, new figures of speech, and to open a new chapter in the history of language.—Prof. H. A. Strong.

OXFORD LOCAL EXAMINATIONS, 1900.

Hints from the Examiners' Reports.

THE tables supplementary to the Division Lists, together with the Examiners' Reports, of the Oxford Local Examinations held last July were published at the end of August. The remarks of the examiners are in many cases very helpful, inasmuch as they definitely state common weaknesses; and teachers will be glad to have their attention called to the most important of these. We have only taken notice of specific faults which can be easily remedied, but remarks upon the general standard of the papers will also be found in the official publications.[1]

Senior Candidates.—The examiners in Religious Knowledge report that in the questions on Genesis involving careful selection of facts and arrangement of knowledge, lack of power was shown by all but a few. Attention is called to three weaknesses in the answers to the questions on Isaiah, viz., an unfamiliarity with oriental history where it does not touch the history of the West, *e.g.*, nearly all confuse Assyria and Babylon; a want of comprehension of Semitic religions, and of their difference from the religions of Greece and Rome; and a tendency to take the surmises of modern commentators for more than their authors intend. The answers to the questions on St. John show that the narratives of this Gospel were, very frequently, confused with those of the Synoptists; and that geography and topography have been neglected.

The English Grammar papers make it clear that, through frequent use of the terms employed in parsing and analysis, many of the candidates have lost consciousness of the precise grammatical force of such words as *Strong*, *Irregular*, *Passive*, *Absolute*, *Finite*. Only rarely have the grammatical significance, the every-day usage, and the etymological force of such terms been associated in the candidates' minds. In many papers a correct definition of a noun sentence or an adverbial sentence was "illustrated" by an utterly wrong example.

In English History answers covering much ground there was often a conspicuous want of proportion, some parts of the subject being treated with great detail, while others of equal importance were dismissed summarily or omitted altogether. Constitutional questions which made some demand upon the reflective powers were, in general, inadequately done.

Candidates in Latin are advised to avoid paraphrase, which is usually loose and valueless. In the Latin Grammar questions the prepositions and irregular verbs need much more attention; while the candidates in higher Latin exhibit a tendency to over-free translation.

The most constantly recurring errors in French were (i) disregard of tense; (ii) awkward rendering of the partitive *du*, *des*, &c.; (iii) confusion between the present participle and the 3rd plur., pres. indic. And in German the order of words and word-formation require more attention.

The chief faults noticed in Arithmetic were a too great tendency to rely on formulæ and a want of ability to deal with decimals. Of all the questions, that which was least well done was the comparatively easy one on compound interest. This was due in most cases to the above-mentioned faults, but in many to a use of approximation methods without clearly understanding them.

The most noticeable weakness in the Euclid answers was arguing in a circle, which was very common in attempting to prove Euclid I., 34. This sometimes arose from the candidates not knowing the definition of a parallelogram. Much nonsense was written about parallel straight lines meeting at infinity—a conception the meaning of which had not been properly grasped.

Junior Candidates.—The prevailing fault in the Religious Knowledge answers was that insufficient attention has been paid to the text of the books of Holy Scripture set for examination. Many of the papers sent in show, too, that manuals are used rather than the Bible itself.

Few candidates perceived, in answering the English Grammar questions, that the object of one of the verbs was an omitted relative, and the conjunctive force of the relative pronoun was not so generally pointed out as might have been expected.

English History answers which could be "memorised" were generally well done; but the reverse was the rule with those requiring thought; *e.g.*, the details of the Petition of Right or of the Battle of Dunbar were accurately given by a large majority of the candidates; but comparatively few could relate the proceedings of the Long Parliament or give a connected account of the reasons for the fall of James II.

The Shakespeare papers showed clearly that a large number of candidates had learnt by heart accounts of characters, &c., and simply wrote them down from memory: they often introduced words and phrases which they did not understand, and not uncommonly in many successive papers there appeared precisely the same account of a character or plot, differing in the spelling only.

The continuous prose in the Latin examination was well done by many candidates; but the sentence produced a wretched exhibition of unsound work. After making every allowance for the youth of the candidates, the mistakes made were of such a character as to indicate that the methods of teaching composition, in a very large number of centres, are unsatisfactory. For instance, the *majority* of candidates who did not attempt the continuous prose wrote "minim*us* filiarum" and "es me*um* host*em*," with many other blunders of the same class.

In the French papers past participles are constantly used instead of a finite verb; infinitives are placed directly after the auxiliary verbs, and prepositions are made to govern participles. The chief defects in the unprepared translation from

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[1] To be obtained of Messrs. James Parker & Co. Oxford.

French seem to be: (1) inaccurate rendering of tenses; (2) a tendency (among the weaker candidates) to write down sheer nonsense, in the hope that, even if the whole phrase be meaningless, they may still get marks for isolated words.

The answers to the question on the Arithmetic paper asking for reasons why a fraction, when converted into a decimal, should produce a finite or recurring decimal were very unsatisfactory. Very few were at all to the point, and among the more intelligent candidates the meaning of factor and multiple was evidently not clearly understood. The majority of candidates were able to find the square root of a fraction, but very few appeared to understand what is meant by "correct to three decimal places."

The definitions of Euclid are very badly known, and suggest the absence of proper explanation on the part of the teachers or the use of bad textbooks. The majority of the candidates hardly appear to know what a definition is: *e.g.*, a parallelogram was usually defined as a four-sided figure having its opposite sides equal and its opposite angles equal. As Euclid devotes a proposition to the proof of this property of the parallelogram, it cannot very well be accepted as a definition.

The most noticeable feature of the work sent in in elementary science seemed to lie in the want of reasoning power shown by the candidates. A definition, as of the parallelogram of forces, was, as a rule, correctly given, but questions which required any originality of thought were seldom answered well. The practical work was done somewhat better than the papers, the specific gravity determinations being, as a rule, quite good, though a fair number of candidates found that cork floating in water possessed weight. In the chemical questions candidates were very apt to make up their minds as to what the gas or substance they were working with consisted of, and then write down various properties which they could not have verified experimentally.

Preliminary Candidates.—In the English History papers there is a conspicuous lack of accuracy in dates; an error of a century or more is quite common. Candidates should be taught to use common sense in this matter. "Charles I." and "Charles II." are written indifferently by many, whilst such vague expressions as "the king's councillor" are far too frequent. It appears from the work shown up that many answers have been learnt by heart in anticipation of the questions. This is much to be deprecated, inasmuch as the mastery of the general history is usually sacrificed by this practice.

Comparatively few answers in English Grammar show any grasp of the idea of a conditional mood. The examiners express a regret that teachers of this subject do not use a more uniform system of phraseology. The composition papers show great weakness in punctuation.

The weakest part of the Latin papers was the translation into Latin, which was intended to test the candidates' knowledge of the commoner kinds of clause construction. Very few showed any appreciation of the difference in construction between clause of purpose and of result. Another extremely common mistake consisted in putting the subject of a subordinate finite verb in the accusative.

Carelessness was shown in writing accents, hyphens and the like in the French papers. There was frequent weakness apparent in the use of the articles and personal pronouns, and there was considerable confusion between adjectives and adverbs, adjectives and pronouns. Many candidates were unable to spell French words with any approach to correctness, a defect especially noticeable in the termination of verbs.

In the Arithmetic papers there was a general reluctance to use practice, and many candidates failed in decimals and the unitary method.

THE TEACHING OF CHEMISTRY AND ITS DEVELOPMENT.[1]

In dealing generally with the subject of the teaching of chemistry as a branch of science it may be well in the first place to consider the value of such teaching as a means of general education, and to turn our attention for a few minutes to the development of the teaching of science in schools.

The first school to give any practical instruction in chemistry was apparently the City of London School, at which, in the year 1847, Mr. Hall was appointed teacher of chemistry, and there he continued to teach until 1869.[2] Besides the lecture theatre and a room for storing apparatus, Mr. Hall's department contained a long room, or rather passage, leading into the lecture theatre, and closed at each end with glass doors. In this room, which was fitted up as a laboratory, and used principally as a preparation room for the lectures, Mr. Hall performed experiments with the few boys who assisted him with his lectures. As accommodation was at that time strictly limited, he used to suggest simple experiments and encourage the boys to carry them out at home, and afterwards he himself would examine the substances which they had made.

From this small beginning the teaching of chemistry in the City of London School rapidly developed, and this school now possesses laboratories which compare favourably with those of any school in the country.

The Manchester Grammar School appears to have been one of the first to teach practical chemistry. In connection with this school a small laboratory was built in 1868; this was replaced by a larger one in 1872, and the present large laboratories, under the charge of Mr. Francis Jones, were opened in 1880.

Dr. Marshall Watts, who was the first science master in this school, taught practical chemistry along with the theoretical work from the commencement in 1868.

As laboratories were gradually multiplied it might be supposed that boys were given the opportunity to carry out experiments which had a close connection with their lecture-room courses. But the programme of laboratory work which became all but universal was the preparation of a few gases, followed by the practice of qualitative analysis. The course adopted seems to have been largely built up on the best books of practical chemistry in use in the colleges at that time; but it was also, no doubt, largely influenced by the requirements of the syllabus of the Science and Art Department, which contained a scheme for teaching practical chemistry. Even down to quite recent times it was in many schools still not considered essential that boys should have practical instruction in connection with lectures in chemistry.

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[1] Abridged from an address to the Chemical Section of the British Association for the Advancement of Science, delivered by Prof. W. H. Perkin Jun., F.R.S., President of the Section, on September 6th, 1900.

[2] Mr. A. T. Pollard, M.A., Headmaster of the City of London School, has kindly instituted a search among the bound copies of the boys' terminal reports, and informs me that in the School form of Terminal Report a heading for Chemistry was introduced in the year 1847, the year of Mr. Hall's appointment.

A Report "on the best means for promoting Scientific Education in Schools" having been presented to the Dundee Meeting of this Association in 1867, and published in 1868, a Committee of the British Association was appointed in 1887 "for the purpose of inquiring and reporting upon the present methods of teaching chemistry." The well-known Report which this Committee presented to the Newcastle Meeting in 1889 insisted that it was worth while to teach chemistry in schools, not so much for the usefulness of the information imparted as for the special mental discipline it afforded if the scientific method of investigating nature were employed. It was argued that "learners should be put in the attitude of discoverers, and led to make observations, experiments, and inferences for themselves." And since there can be little progress without measurement, it was pointed out that the experimental work would necessarily be largely of a quantitative character.

Professor H. E. Armstrong, in a paper read at a conference at the Health Exhibition five years before this, had foreshadowed much that was in this Report. He also drew up a detailed scheme for "a course of elementary instruction in physical science," which was included in the Report of the Committee, and it cannot be doubted that this scheme and the labours of the Committee have had a very marked influence on the development of the teaching of practical chemistry in schools. That this influence has been great will be admitted when it is understood that schemes based on the recommendation of the Committee are now included in the codes for both elementary day-schools and evening continuation-schools. The recent syllabuses for elementary and advanced courses issued by the Incorporated Association of Headmasters and by the Oxford and Cambridge local boards and others are evidently directly inspired by the ideas set forth by the Committee.

The Department of Science and Art has also adopted some of the suggestions of the Committee, and a revised syllabus was issued by the Department in 1895, in which qualitative analysis is replaced by quantitative experiments of a simple form, and by other exercises so framed "as to prevent answers being given by students who have obtained their information from books or oral instruction." This was a very considerable advance, but it must be admitted that there is nothing in the syllabus which encourages, or even suggests, placing the learners in the attitude of discoverers, and this, in the opinion of the Committee of this Association, is vital if the teaching is to have educational value.

Many criticisms have been passed upon the 1889 Report. It has been said that life is much too short to allow of each individual advancing from the known to the unknown, according to scientific methods, and that even were this not so, too severe a tax is made upon the powers of boys and girls. In answer to the second point, it will be conceded that while it is doubtless futile to try to teach chemistry to young children, on the other hand experience has abundantly shown that the average schoolboy of fourteen or fifteen can, with much success, investigate such problems as were studied in the researches of Black and Scheele, of Priestley and Cavendish and Lavoisier, and it is quite remarkable with what interest such young students carry out this class of work.

I believe that in the determination of a suitable school course in experimental science this principle of historical development is a very valuable guide, although it is not laid down in the 1889 Report of the British Association.

The application of this principle will lead to the study of the solvent action of water, of crystallisation, and of the separation of mixtures of solids before the investigation of the composition of water, and also before the investigation of the phenomena of combustion. It will lead to the investigation of hydrochloric acid before chlorine, and especially to the postponement of atomic and molecular theories, chemical equations, and the laws of chemical combination, until the student has really sufficient knowledge to understand how these theories came to be necessary.

There can be no doubt that this new system of teaching chemistry in schools has been most successful. Teachers are delighted with the results which have already been obtained, and those whom I have had the opportunity of consulting, directly and indirectly, cannot speak too highly of their satisfaction at the disappearance of the old system of qualitative analysis, and the institution of the new order of things. Especially I may mention in this connection the excellent work which is being carried on under the supervision of Dr. Bevan Lean at the Friends' School in Ackworth, where the boys have attained results which are far in advance of anything which would have been thought possible a few years since.

It is, of course, obvious that if a schoolboy is made to take the attitude of a discoverer his progress may appear to be slow. But does this matter? Most boys will not become professional chemists; but if while at school a boy learns how to learn, and how to "make knowledge"[1] by working out for himself a few problems, a habit of mind will be formed which will enable him in future years to look in a scientific spirit at any new problems which may face him. When school-days are past the details of the preparation of hydrogen may have been forgotten; but if it was really understood at the time that it could not be decided at once whether the gas was derived from the acid or from the metal, or from the water, or in part from the one and in part from the other, an attitude of scepticism and of suspended judgment will have been formed which will continue to guard from error.

In the new system of teaching chemistry in schools much attention must necessarily be given to weights and measurements; indeed, the work must be largely of a quantitative kind, and it is in this connection that an important note of warning has been sounded by several teachers.[2] They consider, very rightly, that it is important to point out clearly to the scholar that science does not consist of measurement, but that measurement is only a tool in the hand of the inquirer, and that when once sufficient skill has been developed in its use it should be employed only with a distinct object. Measurements should, in fact, be made only in reference to some actual problem which appears to be really worth solving, not in the accumulation of aimless details.

And, of course, all research carried out must be genuine and not sham, and all assumption of the "obvious" must be most carefully guarded against. But the young scholar must, at the same time, not forget that, although the scientific method is necessary to enable him to arrive at a result, in real life it is the answer to the problem which is of the most importance.[3]

Although, then, there has been so much discussion, during the last ten years, on the subject of teaching chemistry in schools, and such steady progress has been made towards devising a really satisfactory system of teaching the subject to young boys and girls, it is certainly very remarkable that practically nothing has been said or written bearing on the training which a student who wishes to become a chemist is to undertake at the close of his school-days at the college or university in which his education is continued.

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[1] *Cf.* Prof. J. G. Macgregor in *Nature*, September, 1899.

[2] *Cf.* H. Picton in THE SCHOOL WORLD, November, 1899; Bevan Lean, *ibid*, February, 1890.

[3] *Cf.* Mrs. Bryant, "Special Reports on Educational Subjects," vol. ii., p. 113.

One of the most remarkable points, to my mind, in connection with the teaching of chemistry is the fact that, although the science has been advancing year by year with such unexampled rapidity, the course of training which the student goes through during his first two years at most colleges is still practically the same as it was thirty or forty years ago. Then, as now, after preparing a few of the principal gases, the student devotes the bulk of his first year to qualitative analysis in the dry and wet way, and his second year to quantitative analysis, and, although the methods employed in teaching the latter may possibly have undergone some slight modification, there is certainly no great difference between the routine of simple salt and mixture followed by quantitative analysis practised at the present day and that which was in vogue in the days of our fathers and grandfathers.

The system of examination which has been developed during the last twenty years has done much harm, and is a source of great difficulty to any conscientious teacher who is possessed of originality, and is desirous, particularly in special cases, of leaving the beaten track.

In our colleges and universities most of the students work for some definite examination—frequently for the Bachelor of Science degree—either at their own university or at the University of London.

For such degrees a perfectly definite course is prescribed and must be followed, because the questions which the candidate will have to answer at his examination are based on a syllabus which is either published or is known by precedent to be required. The course which the teacher is obliged to teach is thus placed beyond his individual power of alteration, except in minor details, and originality in the teacher is thereby discouraged; he knows that all students must face the same examination, and he must urge the backward man through exactly the same course as his more talented neighbour.

In almost all examinations salts or mixtures of salts are given for qualitative analysis. "Determine the constituents of the simple salt A and of the mixture B" is a favourite examination formula; and as some practical work of this sort is sure to be set, the teacher knows that he must contrive to get one and all of his students into a condition to enable them to answer such questions. If, then, one considers the great amount of work which is required from the present-day student, it is not surprising that every aid to rapid preparation for examination should be accepted with delight by the teacher; and thus it comes about that tables are elaborated in every detail, not only for qualitative analysis in inorganic chemistry, but, what is far worse, for the detection of some arbitrary selection of organic substances which may be set in the syllabus for the examination. I question whether any really competent teacher will be found to recommend this system as one of educational value, or calculated to bring out and train the faculty of original thought in students. If, then, the present system is so unsatisfactory, it will naturally be asked, How are students to be trained, and how are they to be examined so as to find out the extent of the knowledge of their subject which they have acquired?

In dealing with the first part of the question—that is, the training best suited to chemists—I can, of course, only give my own views on the subject—views which, no doubt, may differ much from those of many of the teachers present at this meeting. The objects to be attained are, in my opinion, to give the student a sufficient knowledge of the broad facts of chemistry, and at the same time so to arrange his practical work in particular as to always have in view the training of his faculty of original thought.

I think it will be conceded that any student, if he is to make his mark in chemistry by original work, must ultimately specialise in some branch of the subject. It may be possible for some great minds to do valuable original work in more than one branch of chemistry, but these are the exceptions; and as time goes on, and the mass of facts accumulates, this will become more and more impossible. Now a student at the commencement of his career rarely knows which branch of the subject will fascinate him most, and I think, therefore, that it is necessary, in the first place, to do all that is possible to give him a thorough grounding in all branches of the subject. In my opinion the student is taken over too much ground in the lecture courses of the present day; in inorganic chemistry, for example, the study of the rare metals and their reactions might be dispensed with, as well as many of the more difficult chapters of physical chemistry, and in organic chemistry such complicated problems as the constitutions of uric acid and the members of the camphor and terpene series, &c., might well be left out. As matters stand now, instruction must be given on these subjects simply because questions bearing on them will probably be asked at the examination.

And here, perhaps, I might make a confession, in which I do not ask my fellow-teachers to join me. My name is often attached to chemistry papers which I should be sorry to have to answer; and it seems to me the standard of examination papers, and especially of honours examination papers, is far too high. Should we demand a pitch of knowledge which our own experience tells us cannot be maintained for long?

In dealing with the question of teaching practical chemistry it may be hoped, in the first place, that in the near future a sound training will be given in elementary science in most schools, very much on the lines which I mentioned in the first part of this address. The student will then be in a fit state to undergo a thoroughly satisfactory course of training in inorganic chemistry during his first two years at college. Without wishing in any way to map out a definite course, I may be allowed to suggest that, instead of much of the usual qualitative and quantitative analysis, practical exercises similar to the following will be found to be of much greater educational value:—

(1) The careful experimental demonstration of the fundamental laws of chemistry and physical chemistry.

(2) The preparation of a series of compounds of the more important metals, either from their more common ores or from the metals themselves. With the aid of the compounds thus prepared, the reactions of the metals might be studied and the similarities and differences between the different metals then carefully noted.

(3) A course in which the student should investigate in certain selected cases:—(*a*) the conditions under which action takes place; (*b*) the nature of the products formed; (*c*) the yield obtained. If he were then to proceed to prepare each product in a state of purity, he would be doing a series of exercises of the highest educational value.

(4) The determination of the combining weights of some of the more important metals. This is in most cases comparatively simple, as the determination of the combining weights of selected metals can be very accurately carried out by measuring the hydrogen evolved when an acid acts upon them.

Many other exercises of a similar nature will readily suggest themselves, and in arranging the course every effort should be made to induce the student to consult original papers and to avoid, as far as possible, any tendency to mere mechanical work. The exact nature of such a course must, however, necessarily be left very much in the hands of the teacher, and the details will no doubt require much consideration; but I feel sure that a course of practical inorganic chemistry could be constructed which, while teaching all the important facts which it is necessary for the student to know, will, at the same time, constantly tend to develop his faculty of original thought. Supposing such a course were adopted (and the experiment is well worth trying), there still remains the problem of how the student who has had this kind of training is to be examined.

With regard to his theoretical work there would be no difficulty, as the examination could be conducted on much the same lines as at the present time. In the case of the practical examination, I have long felt that the only satisfactory method of arriving at the value of a student's practical knowledge is by the inspection of the work which he has done during the whole of his course of study, and not by depending on the results of one or two days' set examination. I think that most examiners will agree with me that the present system of examination in practical chemistry is highly unsatisfactory. This is, perhaps, not so apparent in the case of the qualitative analysis of the usual simple salt or mixture; but when the student has to do a quantitative exercise, or when a problem is set, the results sent in are frequently no indication of the value of the student's practical work. Leaving out of the question the possibility of the student being in indifferent health during the short period of the practical examination, it not infrequently happens that he, in his excitement, has the misfortune to upset a beaker when his quantitative determination is nearly finished, and as a result he loses far more marks than he should do for so simple an accident.

Again, in attacking a problem he has usually only time to try one method of solution, and if this does not yield satisfactory results he again loses marks; whereas in the ordinary course of his practical work, if he were to find that the first method was faulty he would try other methods, until he ultimately arrived at the desired result.

It is difficult to see why such an unsatisfactory system as this might not be replaced by one of inspection, which I think could easily be so arranged as to work well. A student taking, say, a three years' course for the degree of Bachelor of Science might be required to keep very careful notes of all the practical work which he does during this course, and in order to avoid fraud his notebook could from time to time be initialled by the professor or demonstrator in charge of the laboratory. An inspection of these notebooks could then be made at suitable times by the examiners for the degree, by which means a very good idea would be obtained of the scope of the work which the student had been engaged in, and, if thought necessary, a few questions could easily be asked in regard to the work so presented. Should the examiners wish to further test the candidate by giving him an examination, I submit that it would be much better to set him some exercise of the nature of a simple original investigation, and to allow him two or three weeks to carry this out, than to depend on the hurried work of two or three days.

The object which I had in view in writing this address was to call attention to the fact that our present system of training in chemistry does not appear to develop in the student the power of conducting original research, and at the same time to endeavour to suggest some means by which a more satisfactory state of things might be brought about. I have not been able, within the limits of this address, to consider the conditions of study during the third year of the student's career at college, or to discuss the increasing necessity for extending that course and insisting on the student carrying out an adequate original investigation before granting him a degree, but I hope on some future occasion to have the opportunity of returning to this very important part of the subject.

EDUCATIONAL TOPICS AT THE BRITISH ASSOCIATION.

Proposed Educational Section.—Though more directly concerned with the advancement of science, the British Association has for many years exerted a powerful influence upon the teaching of science in schools and colleges. The rapid increase in the number of papers read each year in the various sections has, however, made it more and more difficult to find time to discuss educational questions, though their importance has been fully recognised. Indeed, on more than one occasion the methods of teaching particular subjects have formed the subjects chosen by the presidents for the addresses in their sections. Professor Perkin's address this year on the Teaching of Chemistry, abstracted on p. 377, is a case in point.

Many men of science have felt for some time that more attention should, if possible, be given to educational matters, and, at the invitation of Professor Armstrong, a representative body of members of the British Association met this year at Bradford to consider the question of a new Educational Section. Though at the beginning of the meeting there was a widespread feeling that, to begin with, a day's conference would be quite sufficient, yet, before the end of the discussion, it was unanimously agreed that a new section was necessary if the attention which scientific methods of education deserve was to be secured. The following resolution was carried without a single dissentient:—"That the Committees of Sections be requested to recommend the desirability of considering whether the annual meetings of the Association may not be utilised for the discussion of questions relating to the scientific methods of education either by the holding of a conference on the subject, or by appointing a special section for the consideration of such questions."

The resolution has been brought before the Council of the Association, and it is to be hoped, in the interests of rational education in science, that they will establish the section suggested.

Peoples of the British Isles.—Professor John Rhys, who this year presided over the Anthropological Section, in his address dealt with the early ethnology of the British Isles, approaching the subject from the points of view of folklore and philology. His conclusions may be summed up as follows:—

The first race in possession of the British Isles consisted of a small, swarthy population of mound-dwellers, of an unwarlike disposition, much given to magic and wizardry, and perhaps of Lappish affinities; its attributes have been exaggerated or otherwise distorted in the evolution of the Little People of our fairy tales. The next race consisted of a taller, blonder people, with blue eyes, who tattooed themselves and fought battles. These tattooed or Pictish people made the Mound Folk their slaves, and in the long run their language may be supposed to have been modified by habits of speech introduced by those slaves of theirs from their own idiom. The affinities of these Picts may be called Libyan, and possibly Iberian. Next came the Celts in two great waves of immigration, the first of which may have arrived as early as the seventh century before our era, and consisted of the real ancestors of some of our Goidels of the Milesian stock, and the linguistic ancestors of all the peoples who have spoken Goidelic. That language may be defined as Celtican so modified by the idioms of the population which the earlier Celts found in possession that its syntax is no longer Aryan. Then, about the third century B.C., came from Belgica the linguistic ancestors of the peoples who have spoken Brythonic; but, in the majority of cases concerned with modern Brythonic, they are to be regarded as Goidels who adopted Brythonic speech, and in so doing brought into that language their Goidelic idioms, with the result that the syntax of insular-Brythonic is no less non-Aryan than that of Goidelic, as may be readily seen by comparing the thoroughly Aryan structure of the few sentences of old Gaulish extant.

Geography in Elementary Schools.—In a very interesting address to the Geography section, Mr. T. G. Rooper described the attempts which have been made to improve the teaching of geography in the elementary schools of the West Riding. The chief reforms have been in the direction of the intelligent study of local maps and models, and in object-lessons which explain the principles of physical geography. The reliefs and models led up to the art of reading maps and to the demand for better maps. Maps must interpret nature, and map reading is the converse of the process of studying home geography. In studying home geography the child begins with a natural feature such as a river or hill, and learns how to represent it on paper. On the other hand, in reading a wall-map the scholar begins with the symbols or representations of natural features which he has not seen, and arrives by means of them at the natural facts which such symbols represent. Hence the extreme importance of the right study of home geography and local models and reliefs. The scholar has to be taught with care how to translate the symbols of the wall-map back into the forms of nature which they, however inadequately, represent. The value of graphic work in teaching geography is now insisted on. The mere copying and colouring maps of various parts of the world is rather an exercise in drawing than in geography. Each map should be drawn to serve some definite purpose. It should disentangle from a complex whole some particular part which analysis brings to light, and illustrate it with precision and simplicity. Further, the sketch-maps should proceed from simpler studies to more complex, and no map should be made of a country as a whole until the leading features have been dealt with separately, and thus the "constructive" method of teaching geography is introduced.

Commercial Geography in Education.—Mr. E. R. Wethey described at the Geography section a three years' course of lectures on commercial geography which is given to the teachers of the West Riding. The course includes:—(i.) the principles of commercial geography and their application to the British Empire; (ii.) the commercial geography of foreign countries; (iii.) special trades and commodities. Several difficulties have been encountered in carrying out the work, the chief among these being the inadequate knowledge of general geography possessed by teachers. Mr. Wethey advocates a system of Government grants for commercial as well as technical and industrial education, and has a very high opinion of the value of appropriate lantern slides.

Science in Elementary Schools.—Dr. J. H. Gladstone presented to the Chemistry section the annual report of the committee appointed by the British Association to watch the progress of science teaching in elementary schools. A remarkable increase is reported during the school year 1898-99 in the number of children receiving instruction in science, and the committee are of opinion that the abolition of individual examination in science subjects has been received with favour by school managers and teachers. The advance which was noted last year in the work of the evening continuation schools does not seem to have been maintained. Nearly all the subjects show a falling off, except elementary physics and chemistry, domestic science and navigation, which give an increase, and horticulture and ambulance, which are practically stationary.

Abnormal Children.—The committee concerned with mental and physical deviations from the normal among children in public elementary and other schools presented a report drawn up by Dr. Francis Warner. This report shows that the excellent work, generally associated with the name of Dr. Warner, with which our readers are familiar, has been steadily continued. The observations made during the years 1892-94 of children exhibiting any abnormal nerve-sign have been arranged in groups as follows:—(i.) children who presented nerve-signs in the face only; (ii.) those exhibiting them in the hand only; (iii.) those with eye-movements only defective, and (iv.) a group showing nerve signs in other parts of the body only. Children with brain disorderliness are often dull, so are the children who are naturally delicate. Dull pupils often present defects in development as well as delicacy and brain disorderliness needing special care and training. Departures from the normal are more frequent among males; but the females with developmental defect or brain disorderliness are more apt to receive harm and to receive less good from their environment than males. It has been shown that good effects follow the employment of physical training at school in diminishing the number of children with signs of brain disorderliness and the proportion of dull pupils.

THE SCHOOL PULPIT.

NOTABLE PASSAGES FROM SERMONS PREACHED IN PUBLIC SCHOOLS.

School and Home.[1]

THOSE of you who know anything of our own literature will remember how, in the bad days of the last century, the poet Cowper was sent from a home of the most exquisite delicacy and refinement to a school in which reigned, unrepressed, those traditions of cruelty, traditions of idleness, traditions of disobedience, traditions of every form of vice which, thank God, have, as traditions, been well-nigh swept away by the reviving earnestness and decency of a better age. And you will remember the consequences. Depressed, unhinged, spirit-broken, by all he had been forced to undergo as a young and sensitive boy, a cloud of melancholy, verging at times on actual insanity, settled upon his mind, and all the happiness of his life suffered an awful shipwreck. He has described that home, in all its tender sweetness, in the immortal "Lines on the Receipt of his Mother's Picture;" he has described that school in all its repulsive vileness in the "Tirocinium." . . . . Now in those days many a sober, God-fearing man must have sent his sons to school, not ignorant, indeed, of the risks they ran, not even compelled by intellectual considerations or the necessities of modern life, but because, in spite of all, he thought that such a course might be morally the best. With many and many an earnest prayer, perhaps with many and many a sad misgiving, he would let his son pass from the quiet vicarage or country house to the Eton, or Harrow, or Winchester of the eighteenth century, knowing that there he might forget to pray, knowing that he might learn there to blaspheme and break God's laws, but knowing also that God's grace, if the boy sought it, would be sufficient for him; knowing that no power on earth could make him go astray if he opposed to it a resisting will; knowing that the innocence of mere ignorance, and the negative goodness which does but result from the artificial absence of temptation, is a poor thing; knowing that, however sheltered from every wind of trial, no human soul can grow up without recognising in itself the awful power to resist God's laws; knowing that such an impulse to disobedience must come to every soul with its complete humanity; knowing, in a word, that God's will respecting us is this: not that we should remain wholly ignorant of the very existence of wrong, but that we should know and conquer, that we should see and pass it by.

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[1] From a sermon on "School and Home" preached to the boys at Marlborough College by the Very Rev. Dean Farrar, when headmaster of the school. The sermon is printed in full in "In the Days of thy Youth" (Macmillan).

And many a sad experience of many a broken-hearted parent who followed a different course would have shown that he was right. For the other method almost always fails. Often a boy, the child of religious parents, kept and sheltered by them as the apple of an eye, brought up, it may be, by their timid love in some country parsonage or the calm shadow of some old cathedral close, going forth, as, sooner or later, he must go forth, unarmed to meet the shock of the world's temptations, has fallen with a more tragic suddenness into a completer ruin. . . . . Why, then, do your parents send you here? Why do they not keep you at home? Might not a wise father, in the fewest possible words, tell you in answer that herein he is but following God's appointed method in the probation of a human soul, and that that method is, not to shield it from the possibility of evil, but to encourage and strengthen it in the deliberate choice of good; not to shelter it from all temptation, but with each temptation to provide also the way of escape; not to stop the ears of His children against those voices which call them aside to the right hand or to the left, but to purge those ears so that they may listen to the high, authoritative and tender voice—that still small voice which you hear every one of you, each in the deep of his own heart, which ever reminds you of the one straight path, and ever utters, "This is the way, walk ye in it."

Now you will be most sensible of such temptations as school life may bring—most inclined to put them forward as a complaint or an excuse—if you have, indeed, succumbed to them; if on returning home you find that either home is changed or you are changed—

> "And, least familiar where he should be most,
> Feels all his happy privileges lost."

Some change, of course, there must be, but it need not be wholly painful. "On a rock where we landed to fish," says a young emigrant in his journal, "I espied a harebell, the first I had seen for many years, and with its meekly-hanging head it told me long and melancholy tales of times gone by, never to return; not that old scenes may not be revisited, and the sunshine be bright as ever, and the flowers blossom as then, but it is he who revisits them is past and gone—himself and not himself; the heart that saw them is dead, or worse, is changed, for that change kills not the memory, the long, lingering gaze after the fading past." What, then, is this change? It is nothing less than the growth of individuality; the full sense of the living free will; the loneliness, the separation, the distinctness of each soul, as, "travelling daily farther from the east," it realises that, like a sphere upon a plane, a human soul can only touch other souls at one single point; that each human soul is an island, and that it is surrounded by an unvoyageable sea.

THE first number of the *Irish School Monthly*, a magazine of practical school work, was published this month. It is intended to assist the national teachers of Ireland in overcoming the difficulties attendant upon the introduction of a new system of national education. The Editor hopes to give in every number "material which the teacher can use every day and every hour of the day." A prominent characteristic of future issues is to be a series of "Notes on Lessons" and other information under the headings of the different subjects of the new programme of the Commissioners of National Education in Ireland. The publication, which costs threepence a month, is published by Messrs. Blackie, at 89, Talbot Street, Dublin.

ITEMS OF INTEREST.

GENERAL.

THE value of International Correspondence as an aid in the teaching of modern languages is becoming more recognised by teachers every year. There are still, however, many schools in which the plans, described by Mr. Neville Ross in another part of the present issue, have not been tried. We are satisfied that good results follow such correspondence, and have therefore arranged to help those of our readers who may desire foreign correspondents for the members of their French or German classes. If modern language teachers will send the names of their pupils to us we will do our best to find suitable correspondents.

MR. GILBERT R. REDGRAVE has been appointed Assistant-Secretary for Technology to the Board of Education. This appointment completes the list of chief officials. The following "Genealogical table," which we adapt from the *Schoolmaster*, shows at a glance the constitution of the Board of Education so far as its permanent officials are concerned:

Permanent Principal Secretary:
SIR GEORGE KEKEWICH.

Principal Assistant Secretary for Elementary Education:
MR. JOHN WHITE.

Principal Assistant Secretary for Secondary Education:
SIR WILLIAM ABNEY.

Assistant Secretary, "Literary" side:
THE HON W. N. BRUCE.

Assistant Secretary for Technology:
MR. G. R. REDGRAVE.

IF the Board of Education continues its present policy of recognising only those higher elementary schools in which the curriculum and equipment are suitable for a "School of Science," the Chambers of Commerce and other advocates of improved commercial education will have just cause for complaint. For some towns the familiar "School of Science" type is a very suitable form of higher elementary school, but there are many other places where a completely different school course is necessary. Distributing centres, for instance, like London and Liverpool, should be provided with higher elementary schools in which commercial subjects, such as conversational French and German, book-keeping and similar studies, form the backbone of the time-table. It is to be hoped that the Board of Education will soon encourage local educational authorities to provide the kind of education which is best suited to the requirements of their districts—rather than insist upon one type of school for every locality.

ALTHOUGH 345 more candidates this year entered for the Oxford Local Examinations than in July, 1899, only 6,265 passed, as against 6,332 in 1899. The total number of candidates examined this year was 9,772—namely, 3,391 preliminary, 4,455 juniors, and 1,926 seniors; of these, 2,290 preliminary, 3,000 juniors, and 975 seniors passed, making a total of 6,265. Of the 270 preliminary candidates (8·2 per cent.) who failed in preliminary subjects, 29 did so in dictation, and 253 in arithmetic; of the 358 juniors (8·0 per cent.) who failed in preliminary subjects, 51 failed in dictation, and 318 in arithmetic; while of the seniors, 64 (3·3 per cent.) failed in the preliminary subjects.

THE premier position in the first class of the seniors is gained by J. N. Beckett, of Monmouth Grammar School; the second place is awarded to P. N. Cane, Oxford High School. Among the juniors C. H. Boyd, St. Ignatius College, Stamford Hill, comes out at the top of the list; R. V. Stanford, King Edward's School, Five Ways, Birmingham, being second. There is a tie for the premier position among preliminary candidates, A. D. Dallow, Tettenhall College, Wolverhampton, and E. Wellott, High School, Wakefield, being bracketed equal; the next in order of merit is T. J. Monaghan, Xaverian Brothers' School, Mayfield, Sussex.

THE results of the Oxford and Cambridge Schools Examination in July last show that 1,062 of the 2,135 candidates for higher certificates and 423 of the 838 candidates for lower certificates were successful. The following numbers taking the different subjects indicate roughly the relative popularity of the different branches of the higher examination:—Latin, 1,301; Greek, 1,149; French, 1,038; German, 309; elementary mathematics, 1,337; English, 1,109; and history, 1,265. Among lower-certificate candidates the numbers were in some subjects as follows:—Latin, 598; Greek, 361: French, 812; German, 194; Arithmetic, 833; Additional Mathematics, 784; Scripture Knowledge, 650; English, 553; English History, 571; Geography, 313; Physics and Chemistry, 187; Geometrical Drawing, 51.

THE September number of the *Educational Review*, of New York, contains a reply by Mr. Lee to the criticisms on American education put forward by Prof. Munsterberg in a recent number of the *Atlantic Monthly*, to which we have already called attention. Mr. Lee thinks that any attempt to import German systems ready made into American education would be disastrous. American ideals are so entirely different from those of Germany. To Americans, says Mr. Lee, “knowledge is not the great end and aim of life, and, if we may judge from the history of our race, it never will be. . . . . Our ideal is an ideal, not of learning but of doing, not of acquirement but of action. We would rather, and can more easily, make history than write it. To us life—the making and the controlling of the good and beautiful things of this world for ourselves and others—possesses more attraction than the acquisition of any amount of knowledge of how these things may or ought to be or have been done. To us money making the principal means which modern life supplies for putting thought into action—does not seem vulgar and second-rate as it does to the European. We see in it life, the joy of contest, the opportunity for brave and noble work, the means of establishing and beautifying the home, of building up the school or library of our native town, of impressing upon outer objects our inner thoughts and aspirations, of living out our ideal as sons, fathers, brothers, citizens.”

A VARIED, useful and interesting course of lectures from external lecturers has been provided for the students of the Mary Datchelor Training College, Camberwell, during the current term. Mr. P. A. Barnett, M.A., will lecture on “Formulæ in Education,” “Method in Teaching Æsthetics,” and “Examinations;” Miss Ward will deal with “The Cultivation of Observation in School Work,” “The Application of Froebelian Principles to School Work” and “Questioning, Illustrations and Home Work;” Miss Emily Phillips will give three lessons in the teaching of Model Drawing. The lecturers on literary and historical subjects are Mr. H. E. Malden, M.A., and Miss Elizabeth Lee; the former will deal with “The Commercial Relations of England and Burgundy in the Fifteenth Century,” More's “Utopia,” “The Dramatic and the True Character of Richard III.,” “The Prince Hal and Henry V. of Shakespeare compared with the Historical Character,” and Spenser's “Foure Hymns;” the latter will lecture on “The Elizabethan Novel” and “John Smith, the Founder of Virginia.” It is not surprising, in view of the provision of courses of lectures like this, that the students of the Datchelor Training College were so successful at the recent examinations at Cambridge for certificates of efficiency in teaching.

THE Council of the Society of Arts have added an Elementary Grade to their annual examinations, so that in 1891 there will be preliminary and general grades in each subject. The examination in the Preliminary Grade will be adapted to the attainments of the genuine continuation school pupil who, after reaching Standards VI. or VII. in an elementary school, goes for two or three years into an evening continuation school. The standard for the General Grade will be the same as that of the existing examinations of the Society, and the regulations will generally be the same as those previously in force, except that, in addition to the certificate granted in each subject, a Certificate of Proficiency in Commercial Knowledge will be issued to any candidate who has passed in the following five subjects within a period of three years:—arithmetic, book-keeping, précis-writing, shorthand, a modern language.

THE National Home Reading Union have now published complete book lists for their twelfth reading season, 1900-1901. We note the young peoples' section includes six divisions, viz., history and biography, literature, travel, romance and humour, nature study, and an additional list. The general course section is divided into (1) social science, (2) history (the Reformation and the Revival of Learning), (3) nature-study—geology, (4) Rome—Italy in the Revival of Learning, (5) travel, (6) biography, (7) novels, essays and poetry, (8) on teaching—for teachers and others. Among the subjects of the special course may be mentioned, the tragedies of Shakespeare, mediæval and early Renaissance literature, German lyrical poetry and education.

PRIVATE benefactors have placed at the disposal of the London School Board sums of money for the purpose of founding scholarships and exhibitions intended to connect the public elementary schools of the metropolis with schools of a higher grade. An examination for these scholarships, open to children from all public elementary schools in the Board's district, will be held on December 4th and 5th. The scholars are supported out of the interest arising from the capital sums which have been invested by the donors themselves or by the Board for the donors. There are eighty-five recurring and 568 terminable scholarships. The annual value of the scholarships varies from £8 to not less than £50 a year, and the period of their tenure between two and five years. Down to 1891 inclusive 613 awards had been made—306 to boys and 187 to girls from Board Schools; and 94 to boys and 26 to girls from non-Board Schools. Of these, thirty-four had been scholarships to blind children and nine had been technical scholarships.

THREE hundred and sixty-three evening continuation-schools for general instruction were opened in connection with the School Board for London on September 10th. In addition to this, sixteen schools for special instruction in commercial subjects and nine in science and art were opened. Separate schools for adults are provided. Lectures on English literature will be given in about sixty schools, and on history in sixteen. Gymnastics will be taught in about eighty centres, and doctors will teach first aid and home nursing in upwards of 200 schools. There will also be facilities for women and girls to learn practical cookery, dress cutting and making, and laundry work; and for men and boys to receive instruction in woodwork. Some form of physical exercises will be taught in all schools, and the lantern will, in many cases, be used to illustrate the lessons in geography, history, &c. Students are prepared for the examinations held by the Board of Education (South Kensington), the Civil Service, Society of Arts, &c., and prizes and certificates are awarded.

THE Programme of Technological Examinations of the City and Guilds of London Institute for the session 1900-1901 is before us. In addition to the syllabuses of the seventy examinations in subjects of technology, the volume contains valuable lists of books of reference in each of the subjects, the regulations for the registration and inspection of classes, and other necessary information for conducting classes in connection with the City and Guilds of London Institute.

THE Board of Education have approved a new scheme, made by the Charity Commissioners, for the future administration of the Haberdashers' School or Aske's Charity. The scheme provides for the income of the foundation to be used for scholastic purposes, with the exception of £1,500 a year, which is to be paid to the Haberdashers' Company for the benefit of poor freemen of the company. There are four schools—two at Hatcham, one at Hampstead, and one at Acton; the latter are housed in temporary buildings, and the scheme provides that as soon as convenient the governors shall apply a sum £60,000 for new buildings. Preference is to be given to pupils who are children or grandchildren of freemen of the Haberdashers' Company. The income is derived from houses and shops in Hoxton and 1,500 acres of land in Kent, and amounts to £16,571 per annum.

THE grants for science and art instruction in training colleges will in future be paid upon the reports of the Inspectors and not upon examination results. Provided it is approved by the Board of Education, a training college may draw up its own course of science, which must, however, be in one of the subjects prescribed by the Board. Students on whose account grants are claimed for a course must take either the examination held by the Board of Education in the subject of the course, or a University examination in that subject, or an examination held, with the approval of the Board of Education, by the college authorities in the subject. In the latter case the questions set and the papers of answers worked by the students must be submitted at the close of the academical year to the Board of Education. If the report of the Inspector is satisfactory, the Board of Education will pay to the college authorities a capitation grant upon each student who has satisfied the conditions laid down in these rules as regards attendance and examination. This capitation grant will be at the rate of 25s. per student for each approved course in mathematics or theoretical mechanics, and at the rate of 35s. for each approved course in any other subject.

THE Bradford Technical College has been reorganised. Until last year the college, which originally cost about £17,000, was under voluntary management and control, but it has now been transferred to the Bradford Corporation. The new Technical Instruction Committee consists of a majority of members of the corporation together with several co-opted members from among local educationists. A full 1d. rate has been levied under the Technical Instruction Acts and the revenue of the college thereby increased by £5,000. Though only nine months have elapsed since the corporation took over the work, very great strides have already been made. During the recent visit of the British Association to Bradford the college was thrown open to members, and an examination of the provision made for work in applied science convinced us that no efforts were being spared to ensure that all the technical instruction imparted should have a direct bearing on the industries of the district. Particular attention is given to the textile industries department, the chemistry and practice of dyeing, and the engineering laboratories.

THE Technical Education Committee of the Cambridge County Council have developed an excellent system of circulating, in boxes of fifty or sixty volumes, books on farming, dairy work, forestry, horticulture, and kindred subjects. By this means it is possible to help the education of greatly larger numbers than can be persuaded to regularly attend classes when they are available, and also to reach persons in small villages where, owing to the smallness of the number of students, there are no classes. The boxes are lent to local village committees for periods of three months. The plan has proved sufficiently successful to induce other county councils to adopt it.

UNTIL this year technical education in Buckinghamshire has been looked after by three divisional committees, but for the future one central committee will do the work of the whole county, being helped in the task by an organising secretary. A new scheme of work has been circulated among the educational agencies throughout the area. If the proposals of the committee are carried out, the education of the county will undergo great improvement and extension. It is proposed to supply permanent buildings for technical education, to increase the number of secondary schools, to develop existing schools, to elaborate a scholarship scheme, and to extend the evening continuation schools. The first step to be taken in the development of existing secondary schools is to be the appointment of permanent science masters where necessary, and the provision of apparatus in those schools at present unsatisfactorily equipped. In addition to this, a permanent staff of lecturers is to be appointed by the committee, and they will travel from one part of the county to another to lecture and conduct classes.

IN a recent article on "English Careers," in the *Spectator*, technical education was defined as being that "which means substantially, in all its grades, education directed to the accumulation of knowledge instead of the strengthening of the mind and character." But, like many other definitions of technical education, it is very unsatisfactory. Men of science never weary of telling us that unless technical education does more than impart mere information it does not deserve the name. Only that education which results in a proper development of all the faculties is worthy of the name of technical; and how it can even begin to do this without strengthening the mind is difficult to imagine. Nobody, moreover, who has even a nodding acquaintance with physical science—with its use of the balance and other instruments of precision—can possibly think that technical education is not concerned with the strengthening of character. It has been truly said that the balance is one of our best teachers of honesty and truthfulness.

AT the recent Congress of British Chambers of Commerce in Paris the teaching of decimals in public elementary schools at an early stage, as an essential part of arithmetic, was advocated. A resolution, adopted at the June Congress of Chambers of Commerce, was endorsed, namely:—"That it is most desirable to take steps to urge the extension of technical and commercial education throughout the Empire, and that wherever possible this education should be placed under efficient public control; and that this Congress is of opinion that the utmost effort should be made throughout the Empire to encourage and furnish facilities for commercial education as a branch of technical and scientific study, and that the Home and Colonial Governments be moved to give aid thereto and ample powers of contribution out of local resources; and, further, it is very desirable that Chambers of Commerce should be represented on Boards of Education in order to advance the interests of commercial education."

"A NOVEL of Scott's is destroyed when made into a school-book, for boys will take no pleasure in reading a school-book. Such is their nature." So says the *Athenæum*—and the remark is hard on the school-book and hard on the boy. But then there is no rule without an exception; and we believe it would be possible to make quite a long list of school-books which boys do take pleasure in, that is, if their way of reading it can be taken as any guide. It would be interesting to have the boys' own opinion upon this matter.

THE *Girls' Realm* for September contains an illustrated article on Roedean School. This very readable account of an important school for girls was, we understand, revised by Miss Lawrence, the Headmistress of Roedean School. The article is the fourth of a series on "Famous Girls' Schools."

ENGLISH assistant-masters are not alone in their dissatisfaction with their present salaries. From the *New Zealand Schoolmaster* we learn there are many young and promising teachers in New Zealand at the present time, some of them graduates of universities, earning from £70 to £100 a year. These teachers would, our contemporary goes on to say, be in receipt of half as much again if they had adopted a trade. It is already becoming more difficult in New Zealand to obtain suitable candidates for the teaching profession since the parents there are beginning to understand how small are the prospects of the schoolmaster. By-and by the value of the teacher's work will be better understood.

A VERY interesting article on "Educational Progress, 1895-1900," in the *Times* of September 6th, deals more particularly with secondary education. Its author summarises its contents in the following words:—"Though no serious attempt has been made to grapple with the problem of organisation upon the lines suggested by the Royal Commission, while the reorganisation of the Education Department and the Science and Art Department into the Board of Education does not at present amount to more than a rearrangement of officials, who to all appearance are carrying on their former work upon the former lines, such progress as has been made is in the right direction, and public opinion is more alive than it was five years ago to the necessity for further advancement. We have legislative recognition of a central authority for education, and the prospect of similar recognition of local authorities for counties and county boroughs; while the principle of enlisting the aid of expert opinion has been adequately recognised by the appointment of a 'Consultative Committee' charged with at least one direct and important function, that of drawing up a register of qualified teachers. Meanwhile there is great activity, especially in large industrial centres, to promote technical education. Well equipped institutions for this purpose are already at work, and their number is rapidly increasing. There is plenty of individual and local effort waiting to be recognised and to fall into line in a properly organised national system so soon as this work can be undertaken by a strong central authority, guiding, informing, and stimulating intelligent and efficient local authorities. There is still much backwardness of public opinion; and a Government with unequalled facilities for placing national education upon a sound basis has failed to appreciate the importance of the task. But there is progress, however slight and halting: *E pur si muove.*"

MR. W. CAREW HAZLITT'S "History of the Venetian Republic," which was published forty years ago, and has long been out of print, is about to be reissued by Messrs. A. & C. Black, not as a new edition, but as an almost entirely new work, having undergone in the long interval a thorough process of revision, rearrangement and augmentation, so as not only to bring down the historical narrative itself for the first time to the close of Venetian independence, but to expand the sections relating to social and economical institutions. Advantage has been taken of all the most recent discoveries illustrative of the career of Venice as a State, and a leading result of the new undertaking, as it claims to be, is to show that the Republic was, in fact, the greatest European empire between Rome and Great Britain, and not merely a rich and powerful commercial city.

THE remains of Vaugelas are stirring uneasily in their resting-place, roused by the commotion that the ministerial circular dealing with the simplification of French grammar has raised. Not a newspaper but has commented on the "*arrêté*," not a school-boy but has greeted it with delight! The most important criticism will be that of the Académie, some of whose members —M. Gaston Paris for one—were on the committee charged with the task of suggesting the changes which the Minister has adopted. If the Académie condescend to discuss the matter formally, it is expected that their report will be issued before October 15th, on which date the "*tolérances*" come in to force. It will then be possible to review the whole situation, for any discussion of the circular, which is still open to alteration, is premature at present. We may, however, remind teachers of French that the new system will hold good in state schools and in examinations conducted by the French Government.

AT present there are only three Universities in Australia—at Sydney, Melbourne, and Adelaide; but a bill has lately been introduced into the Legislature of Queensland to create a University in that Colony. The educational facilities of Queensland are very thorough, and the establishment of a University will round off the system. In addition to the primary schools, there are under the State, grammar schools, technical and art schools, and an agricultural college, all of which grant scholarships and bursaries.

THE statistics of education given in the Administration Report of the North-West Provinces of India show a considerable increase in the number of institutions and in the number of pupils in attendance. The greater part of the increase in the number of pupils is due to a larger attendance of boys in primary schools. A very noticeable fact about the higher education of the district is the unpopularity of the graduate course in science, which appears to be due to the fact that the High Court refuses recognition to graduates in science.

IN mentioning a few omissions from the convenient little booklet of "French Words and Phrases," by Mr. J. C. Anderson and Mr. F. Storr, our reviewer remarked (p. 310), "the dog and the mouse appear, but not the cat." Mr. Storr calls our attention to the occurrence, on p. 18, of "*le chat*," with "*miauler, ronronner* or *faire ronron*," referring to mewing and purring. We regret that this was overlooked by the reviewer.

SCOTTISH.

THE Scotch Education Department have issued an important minute showing the conditions of grant for Science and Art instruction in higher-class schools. The new conditions are intended to replace those of Section LVI. *seq.* of the Science and Art Directory. My Lords are of opinion that, except in very special circumstances, some training in the methods of experimental investigation ought to form an integral part of the curriculum of higher-class schools. A large discretion is left to managers and teachers as to the course of experimental investigation. Provision is further made for grants for instruction in drawing as an art subject and drawing as an application of geometry. The Department trust that great attention will be given to the forming of suitable science courses for girls in mixed schools, and they offer special grants for practical training in cookery, laundry work, dressmaking or other form of household economy.

The conditions for grants are by no means onerous and are framed in a most Catholic spirit, while the rate of payment is on a very liberal scale. For instruction in science (called course A) a grant of ten shillings for each hour per week of instruction may be made on the average attendance of the pupils. For drawing as an art subject (course B) five shillings per hour per week is allowed, and for geometrical drawing (course C) or any form of household work (course D) a grant of six shillings and eightpence per hour per week can be obtained. These grants may be increased by $\frac{1}{10}$th or diminished by one or more tenths for excellence or deficiencies respectively.

A distinguished American superintendent of education has been making a careful study of the educational systems of the British Isles, and has just given to a reviewer an interesting outline of the results of his observation. Contrasting the schools of the Mother Country, he considers that Scotland still retains her historic precedence, though she is being run hard by the enterprise of the great cities in the North of England. The position in Scotland he puts admirably thus: "You in Scotland rely too much on John Knox. You can't expect to do that for ever. You must move ahead, or England will leave you in the rear." In higher education he considers that Wales is an easy first, but, having regard to the unsatisfactory position of her elementary schools, that cannot last very long. He was much struck with the tireless energy of our teachers, who seemed to him to be always hard at work. Indeed, he questioned whether the pupils were left enough to their own initiative. In America the teachers do less and the pupils more. Our candid friend has been keeping his eyes open to good purpose, and his criticisms are well worth noting.

Sir Henry Craik has just issued his report on the inspection of higher-class schools and on the Examination for Leaving Certificates. As in previous reports, Sir Henry speaks strongly on the tendency to withdraw pupils at an age too early to benefit fully from the liberal educational provisions that are made for them. The comparisons that are frequently made between the results achieved by secondary schools in Germany and Scotland are altogether unfair, as they ignore the difference in the conditions that prevail in the two countries. So long as the Scottish lad continues to leave school two or three years earlier than his German contemporary, so long must the responsibility for differences in the results rest not upon the teachers, but upon parents.

The pernicious habit of allowing scholars to begin the summer holiday before the close of the session is again commented upon, but it is satisfactory to find that this habit is less common than in previous years. The fact that scholars who come to the secondary schools from the State-aided schools are not always fitted by previous education to take their places alongside their more fortunate fellow-pupils is regarded as a serious hindrance to the efficiency of the schools. None of the remedies suggested in the report are likely to prove effective. What is needed is a more thorough co-ordination of the primary and secondary systems, so that a pupil can pass easily and naturally from the one to the other.

IRISH.

The results of the Intermediate Examinations held in last June were published at the end of August. In the prize and honour list the Catholic boys' schools show, as usual, extraordinarily brilliant results. The Christian Brothers' schools of Cork and Dublin head the list, and many others, such as Clongowes Wood, Rockwell College, Blackrock College, the Cork Presentation College, take an immense number of exhibitions and prizes. No Protestant School appears till the eighth place in the list arranged in order of the number of distinctions gained. This is St. Andrews College, Dublin, a school established by the Presbyterian body about six years ago. The Protestant girls' schools hold their own strongly, Victoria College, Belfast, taking the first place, and Alexandra College, Dublin, Victoria High School, Derry, with the comparatively small High School, Galway (which takes the first places in two grades), occupying distinguished positions. Among Roman Catholic girls' schools, the convent of St. Mary's, the Loreto, and the Dominican Convents, Dublin, St. Louis, Monaghan, and many others, have won brilliant results. Next year, 1901, will be the last time that examinations of this kind will be held.

The courses in education for teachers being held by Alexandra College began on the 26th September. Mr. Keatinge, lecturer in education, Oxford, is visiting Ireland for the purpose for a fortnight, and a second fortnight will be given by him later in the autumn. Practical work and criticism lessons occupy about three hours each day, with a lecture of an hour in the evening. Four days out of this fortnight will be given to the Loreto convent schools, the remaining days being spent on the courses in Alexandra College.

The Report of the National Board for the year 1899-1900 shows that there were 9,161 schools on the rolls last September, of which 8,670 were in operation. The total number of pupils was 796,163 against 808,467 in 1898 - the largest decrease in eleven years, 12,304. The Commissioners refer to the decline in the population (chiefly due to emigration), which was 12,722 between 1898 and 1899, as the cause of the decrease. In 1890 46·7 of the schools were undenominational. Last year only 37·5 were attended by pupils of all creeds. The average daily attendance was the highest yet reached - 64·5. In those towns where compulsory attendance is in force it was 71·3. Not much has yet been done by the new local councils to use their powers in this respect. The proportion of trained to untrained teachers was 47·8. In future this proportion will be much larger, it is hoped, as no untrained teacher can henceforth obtain good promotion.

CURRENT HISTORY.

Is there any connection between the prophecies of Isaiah and the recent report of our consul at Jerusalem? Without, of course, pressing too literally the poetical words of the prophet, is it not somewhat illogical to feel an incongruity between (say) the 35th and 40th chapters of Isaiah and the modern document? "A highway shall be there" . . . "the rough places plain," &c. This on the one hand, and on the other, "trade is improving every year, owing to the working of the Jaffa-Jerusalem railway . . . . and to the great increase in the number of tourists and pilgrims . . . New orange gardens are spreading in every direction . . . . The Jewish colonies are growing fruit largely . . . . Traffic is increasing with the districts of Moab . . . ." The fortunes of Israel-Judah are one of the strongest illustrations of the real continuity of history.

We recommend to our readers a careful study of Signor Enrico Malatesta's speech on "Anarchy *versus* Crime" recently reported in the papers. We must at present content ourselves with drawing two parallels: The Anarchist does not approve of "violence," but of "resistance to violence," and pours scorn on the "illogical" "Non-Resistants." This recalls—almost *ipsissimis verbis*—the scorn with which an American Peace Society in the early years of this century treated the "extreme" members who had lately seceded from them and who denied the right of "government" to take the life or liberty of any one, and refused to act as judges or jurors. But Malatesta also reminds us of our own great advocate of regicide. To those who know Milton only as the great religious poet, it will doubtless be a revelation to read some of his prose works. To say nothing of his ideas on divorce, it would be interesting to the average Englishman to read the seventeeth-century Republican's views on the Tenure of Kings and Magistrates or his *Defences* of the People of England after 1649.

Bresci has began his life-long expiation for the murder of King Umberto. His punishment has reminded us of the variations that have taken place lately in European states on the subject of the penalty for killing a fellow-creature. The reader will remember the recent cases of Sipido and of Lucchesi. A storehouse to which the budding orator may be referred for all the arguments against capital punishment will be found in an early speech of Maximilian Robespierre's made to the National Assembly in 1789. Regicides have generally had short and terrible shrift. We need not go farther than French history for examples of ferocity to such folk.

BRADFIELD COLLEGE. THE QUADRANGLE.

For all but thirty years the German Empire has celebrated September 2nd, the anniversary of the great surrender at Sedan in 1870, which virtually ended, after a month's hostilities, the Franco-German War. It is related that Bismarck was asked in the course of that struggle, "Against whom are you fighting?" and that his reply was, "Against Louis XIV." There was much true history involved in that laconic reply. But this year, the Kaiser has issued orders that the anniversary is not to be celebrated, and we suppose it will not be kept for the future, at least with such fervour, until there is occasion for another anti-Gallican fury. We remember the unusual phenomenon of crowded churches on these occasions, the feverish sermons of Protestant Prussian pastors, their calm and unconscious assumption that the Germans were God's people, and that to some vague degree the French were His enemies as well as theirs. One was led to wonder somewhat what *was* the real religion of Germans.

A MODERN FOUNDATION.[1]

To use an expression of the American Ambassador at a recent speech-day of another school, the foundations of Bradfield College are not wet with the spray of the Deluge, it is true, yet the records of the fifty years of its existence have provided Mr. Leach, the well-known author of "English Schools at the Reformation," with interesting material enough to fill a large volume. "The origin of Bradfield College was certainly a little unusual. It was designed, in the first place, to supply a good choir for the rebuilt church of which the founder of the school was the rector—a scheme which soon, however, gave way to much broader ideas. Much is to be learnt from the book about the founder, Thomas Stevens, the "funny old gentleman who had tied a school up to a church," to quote Jowett's description of him. "He had to manage schoolmasters, a race that loves its own way, and cannot easily work in harness," as Canon Mozley has written in his "Reminiscences;" and after following the frequent changes in the headmastership, one is led to confess that Stevens appears to have done it very unsuccessfully.

Two examples of the way the founder, who was also first warden, had of dealing with assistant schoolmasters may, perhaps, explain to some extent this want of success. "A certain young curate came to Bradfield to be looked at for a combined clerical and scholastic post. The rector was observed to look critically at a golden embroidered stole he wore, and when in the vestry after service the youth kissed it when he took it off, the rector turned to his neighbour with a grimace and observed, 'That young donkey will not eat his carrots from your stall or mine.'"

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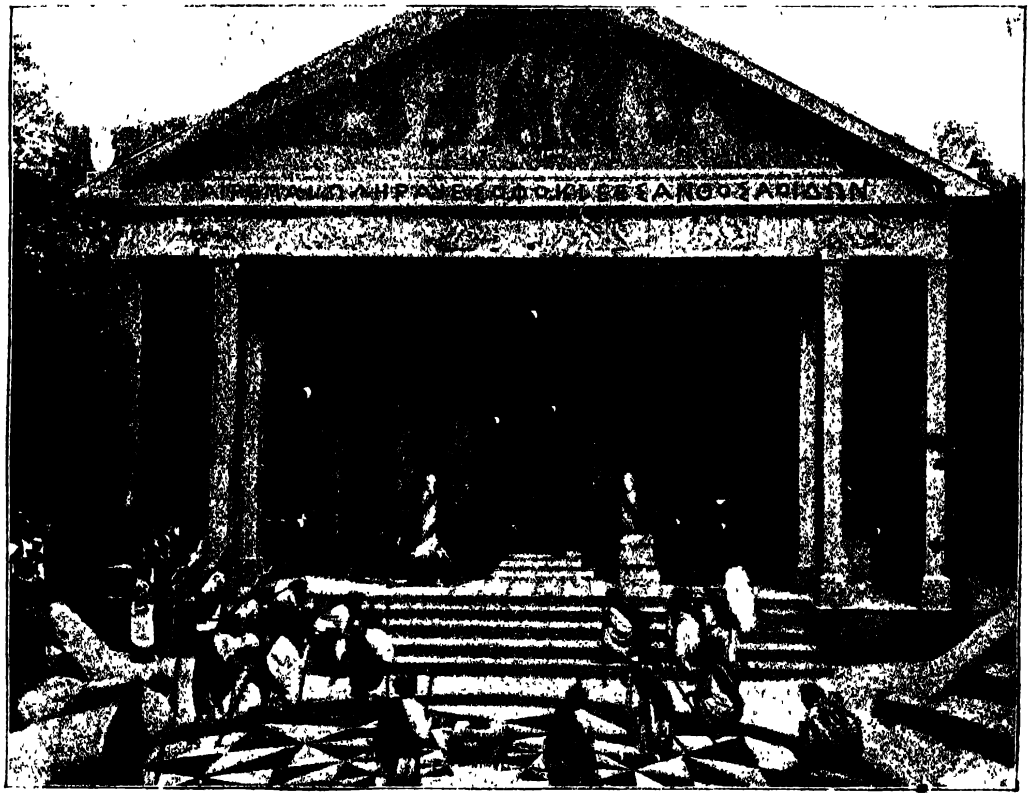
[1] "A History of Bradfield College." By Old Bradfield Boys. Edited by Arthur F. Leach. xii.+245 pp. (London: Henry Frowde.) 10s. 6d. net.

"Once when a master who had not been paid his salary went to ask for it, and was told he could not have it, he said, 'But, Mr. Warden, what am I to do?' and the warden replied, in all seriousness, 'Read the Nicene Creed, my dear. When I have been in trouble, I have always found great comfort in the Nicene Creed.'"

Stevens's way of appointing masters seems to have often been very casual, though in the case we quote it turned out successfully enough. "The Rev. S. P. Denning succeeded to the headmastership in 1860. A story is told of his appointment which is at least *ben trovato*. It is said that his application was the first of several scores that were opened by the founder. When he read the words, 'Stephen Poyntz Denning,' he said, 'This is an omen. "Stevens appoints Denning." So he shall'; and he opened no more of the applications."



BRADFIELD COLLEGE. THE "ANTIGONE," GREEK PLAY, 18

This Mr. Denning apparently had a reputation for wit. After prayers one evening he said to the school, "Boys, a new boy is coming named Bill; let us have our laugh out now." It was the same headmaster who replied to the youngster who had complained to him that the boys would call him "devil," "Come, never mind that; when I was at school they called me 'Beelzebub.'"

Either the masters at Bradfield have been more than usually "funny" for schoolmasters, or else Mr. Leach has a greater liking for jokes than your ordinary editor, for this history is decidedly more entertaining than many which have come before our notice in recent years. Powley was organist and also mathematical master in the sixties, and "two self-invited amateurs, a violinist and a 'cellist, had invaded his rooms and got him good-naturedly to accompany them in some trios. Powley bore it with resignation for an hour or so, until after playing they began discussing the relative beauties of the various passages. 'I think,' said Powley, appealed to on the question, 'the best passage is that leading from my room.' His friends took the hint." Another headmaster, Morley, once proposed to cane a lower sixth-form boy, "not as a punishment, but as a stimulant."

But these anecdotes only serve to add to the interest of Mr. Leach's volume; they in no way interfere with the excellent manner in which the story of Bradfield's development is told, especially of Dr. Gray's methods of fighting an array of obstacles which might well have appeared insurmountable.

The editor tells us that the chapter on the buildings owes much of its completeness to Mr. F. Woods; it certainly provides a readable account of the gradual growth of the school fabric as increased accommodation became necessary. The illustration, reproduced with its companion by the courtesy of the publisher, shows the quadrangle, which has never been completed,—fortunately, says Mr. Leach, or one of the best views from the college would have been lost.

It is for its performance of Greek plays, however, that Bradfield College is best known to the public. These date from 1881, when Mr. F. R. Benson, an old schoolfellow of Dr. Gray, at Winchester, officiated as stage manager. In 1888 an old, disused chalk-pit just outside the college grounds was converted into a Greek theatre. In June, 1890, Bradfield College, thus furnished, produced under unique conditions its first open-air Greek play. The second illustration shows the performance of the "Antigone" of Sophocles in 1898, by which time the auditorium of the theatre had been doubled.

Enough has been written to show that this history of Bradfield College is decidedly worth reading. It is never dull, and affords a good object-lesson of the zeal for education which is not the least pronounced character of the second half of the expiring century. Both editor and publisher are to be congratulated upon the attractiveness of the well-printed and profusely illustrated volume.

RECENT SCHOOL BOOKS.

Edited Books.

Macaulay's Life of Johnson. Edited by D. Nichol Smith. 104 pp. (Blackwood.) 2*s.* 6*d.*—The sooner young English people, boys and girls alike, are led to take an interest in Samuel Johnson (perhaps the most unique figure in all English literature) the better for them. The present edition will admirably serve that purpose, and it is moreover the first annotated edition of an essay which shows us Johnson at no disadvantage and Macaulay at his best. The introduction is itself a charming essay, and its scholarly qualities are only equalled by its transparent honesty. The indication of Macaulay's weakness in estimating the moral effect of works of genius is a rarely candid criticism. The chronological tables are very full, and the notes clear and satisfactory.

The Lady of the Lake. Edited by R. G. McKinley. 169 pp. 1*s.* Also *The Lay of the Last Minstrel.* Edited by W. M. Mackenzie. 115 pp. (Black.) 1*s.*—These two poems of Sir Walter Scott have been edited over and over again, and the present volumes seem more remarkable for the stereotyped plan of their introductory matter than for any weight of wisdom or real usefulness they may possess. In each case we have a biography of the author, a disquisition on the characters of the poem, notes on its reception, its historic and geographical setting, and a discussion of the metrical structure. All these things promise well, but on examination they possess little more than purely pedagogic value. This is no doubt the primary end of these books, but English literature as a school subject is not to end here.

The Mother Tongue. Books I. and II. By G. L. Kittredge and S. L. Arnold. 321 and 332 pp. respectively. (Ginn and Co.)—This is another American attempt to teach English from the standpoint of rhetoric. Any ordinary child who, from his earliest school-days, could be led through the intricacies of English prose and verse on the plan followed by these American instructors would probably find, after a year or two, that he possessed a considerable appreciation of the beauties of English as a written and spoken language. But the many other subjects included in an ordinary school curriculum would be found to clash with the close attention which alone could carry a pupil through these rather large text-books. There is much to be said for the simplicity and clearness which the editors have contrived to give to the arrangement of their subject matter; but the title of the work is as forbidding as its size. It indicates little and explains less. So far as English schools are concerned at least, we fear the title will not prove an attractive advertisement for the authors' painstaking labours.

Kitty's Garland. By Lady Lindsay. 15 pp. (Kegan Paul.) 1*d.*—Very small children will rejoice in this little compilation. It is nowhere above a very juvenile comprehension indeed, and at the price cannot represent money wasted.

Selections from Tennyson. ("The Lotos Eaters," &c.) With Illustrations and Notes. By F. J. Rowe and W. T. Webb. 187 pp. (Macmillan.) 2*s.* 6*d.*—This addition to Messrs. Macmillan's well-known series of English Classics is quite worthy of its position. The selections may be, perhaps, considered a little arbitrary, for they include "The Lotos Eaters," "Maud," the "Funeral Ode on the Death of Wellington," "The Coming of Arthur" and "The Passing of Arthur;" and the Introduction to the "Idylls of the King" seems to have little bearing upon the main part of the book. As a fine piece of criticism it is, however, valuable. The notes are all that can be desired or needed.

Text-book for The Three Creeds. 144 pp. 1*s.* 6*d.* Also *Text-book for The Church Catechism.* 127 pp. By Rev. Septimus Buss. (Rivingtons.) 1*s.* 4*d.*—Here we have Mr. Buss again on his favourite lines. It must, however, be allowed that these two little volumes are distinctly above the average of such ecclesiastical publications. They are as clear as language can make them; the divisions of the subject-matter are excellent, and so far as formal theology is of any use in a school they will serve a good purpose. As manuals for those who have to prepare candidates for confirmation they will be found exceptionally valuable.

Johnson's Life of Milton. 139 pp. 2*s.* Also *Macaulay's Essay on Milton.* 155 pp. 2*s.* By T. W. Berry and T. P. Marshall. ("P. T. and S. S." series.) (Simpkin, Marshall & Co.)—These editions do not aim high, but they probably will hit the mark so far as pupil-teachers are concerned. They have conciseness and abundance of information to their credit; but they also display many of the defects often attributed to the pupil-teacher system. They will not help much in the work of making scholars. For the particular kind of examination, however, for which these books are prepared they will be found serviceable.

Geography.

A School Geography of the World. By L. W. Lyde, M.A. 382 pp. (A. & C. Black.) 2*s.* 6*d.*—We have already had several opportunities of noticing in these columns Mr. Lyde's works in geography, and have had pleasure in directing attention to their many good features. The book before us is no exception to the general excellence of the author's methods of treating geography. We thoroughly endorse his belief that it is one of the most educational of all school subjects. Many text-books on geography are little more than gazeteers or directories, and their educational value is *nil.* Mr. Lyde, by illustrating the effects of geographical environment upon man's social, commercial and political activities, teaches pupils to think for themselves.

Synthetical Maps. By W. R. Taylor. (A. & C. Black.) Price 2*d.* each set of three.—These maps are intended for use with Lyde's Geographics, and are drawn in sets of three for each country. No. 1 is an ordinary political map; No. 2 omits names of places, giving instead facts connected with places marked in No. 1, *e.g.*, industries and natural products; No. 3 is a blank map containing only figures indicating places, etc., on the others. It serves as a "test-map." We think the principle is a good one, and an intelligent use of the maps will be of much educational value.

Grammar and Composition.

Language Lessons. In three books for junior classes. (Edward Arnold.) Books I. and II., 2*d.*; Book III., 3*d.*—These lessons contain exercises in spelling, transcription, word-forming and sentence-forming, and are designed to teach "the correct use of language" to the three junior classes. The language, accordingly, is very simple, and so are the exercises; grammatical terms and rules are avoided. The "lessons" should prove useful for very young children, but they are of too elementary a type for use in most secondary schools.

Science and Technology.

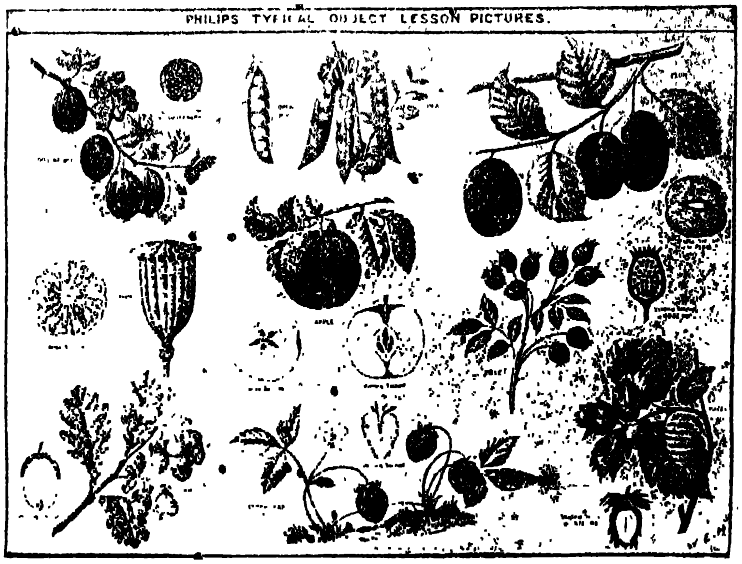
An Introduction to Vegetable Physiology. By J. Reynolds Green, Sc.D., F.R.S., F.L.S. xx.+459 pp. (J. and A. Churchill.) 10*s.* 6*d.*—There is, as Professor Green remarks in his preface, a dearth of elementary text-books dealing solely with Vegetable Physiology; the book under consideration is intended to fill the gap, and to serve to pave the way of the student and of the general reader to the more complete discussion of the subject which may be met with in the advanced text-books. On the whole, the work is very good, and will not fail to lay a sure foundation for a deeper knowledge of this particular branch of botany. There are a few points, however, which might be improved. For example, on p. 21 collenchyma and sclerenchyma are spoken of as being protective in function; their true use is described later. Then, again, it is doubtful whether the tegumentary tissues perform a mechanical function to the extent ascribed to them by the author. Generally speaking, the volume is well up-to-date, and this being the case, it is surprising to find in chap. xiv. *Lathræa* described as an insectivorous plant, capturing insects and other small animals by means of protoplasmic filaments protruded from the glands lining the interiors of the cavities of the tooth-like leaves. Recent investigation tends to show that the insectivorous idea is highly improbable, and that the function of these glands is rather that of removing excess of water from the plant. Whether this be the case or not, the author would have done well to call attention to the more recen views held regarding the function of the leaves and their glands. The book is well printed, and illusrated by 184 figures, the majority of which are very good.

PHILIPS TYPICAL OBJECT LESSON PICTURES.

Animals which sleep in winter.

Outlines of Field Geology. By Sir Archibald Geikie. xvi.+260 pp. (Macmillan.) 3*s.* 6*d.*—Sir Archibald Geikie's little book on open-air geology has, we are glad to notice, reached a fifth edition. It has been a favourite with teachers and students of the subject ever since its first appearance in 1876. We have no doubt that by its help many a man has been able to develop an intelligent love of geology as an outdoor recreation, a way of regarding the science which the author of the book has done so much to popularise. The volume has been thoroughly revised and brought up to date; numerous alterations and additions have been made, but its now well-known, simple style of treatment has not been interfered with. We can unreservedly recommend the book from personal experience of it. Anyone who will make it the companion of country walks for a few weeks will be surprised to find how it adds to his enjoyment.

Typical Object Lesson Pictures. Selected by Professor R. A. Gregory. 1. Animal Life. 2. Plant Life. (G. Philip & Son.) 9*s.* per set.—Each of these series of pictures consists of six diagrams, size 23 by 30 inches, printed in colours on stout manila paper, eyeletted in the corners, and packed in a strong cardboard box. A handbook containing outlines of lessons for the use of teachers is provided with the pictures. We are glad to notice that care has been taken to select the commonest animals and plants for treatment, and, what is very important, a wise discrimination has been observed in omitting unnecessary details from the pictures. The editor of the series has selected all the subjects of the diagrams from the Revised Instructions to Her Majesty's Inspectors, and there can be little doubt that the diagrams will be widely used. The little book of notes, which can be obtained separately for sixpence, effectively calls attention to the facts illustrated by the diagrams. Besides being distinctly artistic, the pictures are also more accurate than many others which have come before our notice. A good idea as to the character of the diagrams may be obtained from the accompanying illustrations which have been reduced from two of them. The animal life series includes the following subjects:—Comparison of cat and dog, comparison of cow with sheep and goat, comparison of horse with donkey, comparison of rabbit with hare, fish of different shapes, and animals which sleep in winter. The botanical pictures include:—Different kinds of roots, different kinds of stems, the shapes of leaves, flowers and their parts, kinds of fruits, and how seeds are scattered.


PHILIPS TYPICAL OBJECT LESSON PICTURES.

Different kinds of Fruits.

Miscellaneous.

The Education of the Young in the Republic of Plato. By Bernard Bosanquet, M.A., LL.D. iv. + 198 pp. (Cambridge University Press.) 2*s.* 6*d.*—There is here presented the description and theory of education for the young which is found in the earlier books of Plato's "Republic." That the translation is excellent is only what one would expect from the name on the title-page, and we have little doubt that the little volume will prove very popular with teachers. The translation of Book II., 366 to end, together with Books III. and IV. of the "Republic," which makes up the greater part of the volume, is preceded by an excellent introduction, in which Greek education in the best days of Greece, education in the "Republic" and after Plato's time, are all dealt with in a helpful and scholarly manner. It is particularly instructive to have it so clearly brought out what a great deal the Greeks were able to accomplish with so limited a curriculum. A Greek citizen's son in the best age of Greece "was taught reading and writing, to which a little practical arithmetic was added, and in some cases perhaps the elements of geometry; he was taught to sing and to play a simple stringed instrument, and—here is the feature which we at once recognise as exceptional—he was instructed in dancing and in various athletic exercises by a special teacher, whose lessons he attended no less regularly than those of his other masters, and for quite as many years of his life."

Colonial Civil Service. By A. Lawrence Lowell, xiv. + 346 pp. (Macmillan.) 6*s.*—Teachers should note that this volume is not essentially a guide to the Civil Service in the English Colonies, though it contains a deal of information that would prove useful to students entering for the competitive examinations for the Indian Civil Service and Eastern Cadetships. It is a detailed examination of the methods of selecting colonial civil servants in England, Holland and France, its *raison d'être* being to facilitate comparison of the merits of the several systems of recruiting for the service, in order to more clearly approach the problem confronting the United States with regard to the administration of the Philippine Islands. We cannot boast an acquaintance with the Dutch and French systems, but the chapter on the English system is well written, though Mr. Lowell errs to the extent of £6 when he asserts (in the note on p. 30) that no fee is required from candidates for the Indian Civil Service. An interesting addendum to the volume is an account of the East India College, at Haileybury, by Professor Morse Stephens.

Studies of Heads. By H. Ryland, R.I. (Faulkner.) 4*s.*—These four pictures form a set of reproductions of four charming studies of female heads, and would make an excellent quartette to hang upon the walls of a class-room, hall, or study. They are a credit alike to the artist and to the publishers. Two of the heads are in profile and two are nearly front views, while each is an example of a different type. It is very difficult to say which is the best, as all of them are expressive, with admirably treated backgrounds. There is a refined expression in them which can only influence for good anyone who studies them. Amongst certain slight faults is the obtrusiveness of a piece of fruit in the background of one of the profiles, and the fillet which binds the hair of one of the full-faced heads seems to make the girl have very little skull. It would also have been advisable to number the drawings at the back in accordance with the list on the cover. Despite these slight drawbacks, however, the faces are admirably rendered, and are well worth the price charged for them.

30th Annual Report of the N.U.T. 1900. cli. + 332 pp. (At the office of the N.U.T.)—The National Union of Teachers is, as everybody knows, a power in the land. For thirty years it has watched over the interests of masters and mistresses in public elementary schools. Amongst such teachers its words are law. As even a cursory glance at this voluminous report shows, the Union in every way merits the loyal support of its members. There seems to be no phase of the work of an elementary schoolmaster which the officials of the Union have not studied and watched over.

Descriptive Handbook accompanying the British Education Section. vi. + 149 pp. (Eyre and Spottiswoode.) 1*s.*—The aim of the compilers has been to present a general outline of the different grades of education—primary, secondary, technical, and university—as it exists at present in each division of the United Kingdom. So says the preface of this well-filled little volume, in which the wishes of the sub-committee of the Royal Commission for the Paris Exhibition have been very satisfactorily carried out. To educationists, of course, the contents of the little book are familiar enough, but the visitor to the exhibition will find there is just enough information here to make the exhibits intelligible. To foreigners the publication should be of especial value, containing as it does in small compass the leading facts about British education.

Commercial Law. By W. Douglas Edwards, LL.B. viii. + 227 pp. (Methuen.) 2*s.*—This is another attempt to present technical knowledge in a rudimentary form, in order to meet the pressing demand for a thorough commercial education. In essaying to boil down that hotch-potch of various branches of law known as Commercial Law into an attractive volume, Mr. Edwards had no sinecure, and we should have been agreeably surprised if the book had smacked less strongly than it does of the proverbial legal dryness. Though it gives an impression of the stringing together of definitions, the work is concise, comprehensive and apparently trustworthy.

Simplex Civil Service Copy Books. By John T. Pearce, B.A. (Blackwood.) 2*d.* each.—Those teachers who are anxious to train their pupils to write in the style associated with Civil Service competitions should find the copy-books designed by Mr. Pearce very useful. The writing is certainly simple, it may, in fact, be reduced to four elements, in which the pupil is rigorously exercised in the earlier books before proceeding in later numbers to continuous writing. To prevent error, the introductory copies are printed on a specially prepared grained paper.

A Plea for a Rule of Life. By Thomas Field, D.D. 17 pp. (Rivingtons.) 2*d.* *Religious Education in the Home.* With a preface by the Lord Bishop of Bristol. 47 pp. (Rivingtons.) 6*d.* *net.*—We have here two little pamphlets on profoundly interesting subjects. The first should be read by all schoolmasters, to whom it is an appeal by the Warden of Radley College. The second is addressed to parents of the upper and middle classes in the hope of encouraging definite religious teaching in the home.

Macmillan's Art Studies. 32 pp. Price 6*d.*—These studies of animals, plants, common objects and conventional forms are designed as a course of instruction in freehand drawing for pupil teachers and others. The convenient form in which they are published should ensure their popularity.

The Games Drill Book for Boys and Girls. By A. Alexander. (G. Philip & Son.)—This is the latest addition to Mr. Alexander's series of musical drills. It is provided with vocal accompaniments, and introduces a great variety of physical exercises. The drill is sure to be popular with little boys and girls who, while being entertained, will at the same time be judiciously exercising their muscles.

SECOND CLASS COLLEGE OF PRECEPTORS EXAMINATION, DECEMBER, 1900.

Revision Test Papers.

THE following examination questions cover the syllabuses of the second class examination of the College of Preceptors in December next. It is believed that these revision tests will prove useful to teachers in discovering the existence of weak points in the preparation of their pupils.

Copies of the papers in any of the subjects can be obtained in a form suitable for distribution in class. The reprinted papers are sold in packets of twenty-five at a cost of 6d. net for each subject. The papers may be ordered through a bookseller, or they may be obtained (post free) from the Editors of THE SCHOOL WORLD, but in the latter case all orders *must be prepaid*.

Particulars of other suitable test papers will be found in our advertisement pages.

Old Testament—I. Samuel.

(1) Give a brief (but clear and full) summary of the life and work of Samuel.

(2) Contrast the character of Saul and David as they are portrayed in the First Book of Samuel.

(3) What do you know of the Philistines, and what circumstances are embodied in this Book to show their relations to the Israelites?

(4) Explain, giving the context and describing the circumstances in which the following words occur:—

(1) "God gave him another heart." (2) "All the people feared the Lord and Samuel." (3) "In Michmash eastward from Bethaven." (4) "He set him up a place."
(5) "Rebellion is as the sin of witchcraft."

(5) What mention is made of witchcraft? and what gods of the heathen are connected with the narrative in this Book?

English Grammar and Composition.

(1) Write the following words, correcting the errors in spelling, *if any*:—withold, spontanity, alright, acomodation, perceived, choncology, soliloquys, prefering, procede, extacy, magnificient, noticable, independant, confectionary, hepothysis.

(2) Analyse:—

When the horseman, who had been sent out to reconnoitre, reported that he had seen several Spartans outside the walls, some amusing themselves with gymnastic exercises, whilst others were combing their hair, Xerxes was much surprised and inquired what was the meaning of this madness.

(3) Parse:—

Thou hast given me to possess
Life in myself for ever.

(4) Correct the following sentences, giving your reasons:—

(*a*) Which is the most beautiful of the two flowers?
(*b*) All birds of these kind are not migratory.
(*c*) To whither has he gone?
(*d*) Here is the boy whom I think caught the thief.

(5) Define the following and write sentences in illustration:—Complement, Prepositional Phrase, Complex Object, Retained Object, Absolute Phrase, Conjunctive Adverb.

(6) What is a *diminutive*? Give examples.

(7) How are Adverbs formed?

(8) Give instances to illustrate the rules for forming the plurals of Compound Nouns.

(9) Write a short essay on one of these subjects:—

(1) Heroes.
(2) The Advantages of Cycling.
(3) Butterflies.

English History.

1066-1603.

(1) Take **five** (not more) of the following dates, and assign important events to each:—1100, 1154, 1215, 1295, 1314, 1377, 1497, 1536, 1570, 1600.

(2) Show how Wales was gradually brought under English rule.

(3) Draw a genealogical table showing those kings of England during your period who were ancestors to Queen Victoria.

(4) Tell the story of the development of Parliament, **either** (*a*) as regards its *composition* in the thirteenth century, **or** (*b*) as regards its *powers* in the fourteenth century.

(5) Show that during the fourteenth and fifteenth centuries England was usually friendly with the rulers of the Netherlands, and account for this fact.

(6) How did Henry VII. acquire the throne of England, and how did he keep himself in possession?

(7) **Either** (*a*) Trace the course of ecclesiastical affairs in England from 1538 to 1570,

Or (*b*) Describe the Northern Insurrections of 1536 and 1569.

(8) Show some acquaintance with the exploits of English seamen in the days of Queen Elizabeth.

Geography.

N.B.—Seven questions only may be attempted. *Three* must be taken from Section A, and the remaining four must be taken from *either* B *or* C. No. 5 is obligatory. Tabulate the answers as far as possible.

Section A. General.

(1) Name, in order, the countries with the position of their capitals, (*a*) on the south of Asia, (*b*) of Australia.

(2) In what ranges, &c., are the following peaks situated:—Elburz, Jorullo, Kenia, Horeb, Jungfrau, Compass Berg, Ida, Everest, Fremont, Ararat, Cook?

(3) Give the exact position of the following:—Tristan d'Acunha, Celebes, Bolivia, Gobi Desert, Alaska, Formosa, Lakes Balaton, Thun, Eyre; Capes Leeuwin, Matapan.

(4) Explain and illustrate:—isthmus, delta, tropics, archipelago, tornado, pampas.

Section B. North and Central America: West Indies.

(5) On the map of the United States draw the courses of the Mississippi and the Colorado; mark the chief capes and gulfs, and the following towns and states:—Charleston, St. Louis, Denver, Philadelphia, Mobile, Illinois, Montana, Pennsylvania, Maine.

(6) Name the provinces constituting the Dominion of Canada and their capitals.

(7) Where are the following and for what is each noted:—The Yellowstone Park, Great Salt Lake, Kicking Horse Pass, Belize, Trinidad, the Welland Canal?

(8) Give an account of the Laurentian Lakes.

(9) What railways cross North America from coast to coast. Estimate their importance.

(10) Give an account of the climate and commercial products of Jamaica and Cuba.

Section C. British Isles and Africa.

(5) On the map of the British Isles mark the chief mountain ranges, the rivers Shannon, Thames, Liffey; Capes Wrath and Clear; and the following towns and counties:—Londonderry, Reading, Wick, Elgin, Merthyr Tydvil, Ventnor, Fermoy, Berkshire, Roscommon, Kincardine, Fife.

Number one of the parallels of latitude passing through three of the countries, and the meridians of longitude which it cuts in England.

(6) Mention the British Possessions in Africa, with their capitals.

(7) Explain what is meant by:—The Sudd, Bushmen, Veldt, Kloof, Cameroons, Khama's country.

(8) Give an account of the Nile so as to illustrate the remark, "Egypt is the gift of the river."

(9) Where are the following, and for what are they noteworthy:—Perim, Delagoa Bay, Stanley Falls, Walfisch Bay, Kumasi, Beira, Lake Nyassa, Adowa.

(10) Give a short description of the productions, the British trade and the climate of Cape Colony.

Arithmetic.

(1) Divide £7 19s. 8d. between A, B and C, so that A may have 13s. more than B and B half as much again as C.

(2) A field of 2½ acres is divided into allotments; if each allotment is to be 440 square yards in area, how many can there be? and what will be the area of the remaining portion

(3) Simply:—

$$\text{(i.)}\ \frac{6+(\frac{4}{11}\times\frac{5}{16})-(\frac{6}{11}\text{ of }4\frac{1}{8})}{6-\frac{5}{6}\text{ of }1\frac{5}{16}-\frac{17}{18}};\quad \text{(ii.)}\ \frac{5-\frac{8}{2\frac{1}{4}}}{6\frac{2}{3}+\frac{2}{3\frac{5}{7}}}.$$

(4) Find the sum and difference of $12{\cdot}463$ and $12{\cdot}4\dot{6}\dot{3}$; also, the product of $\cdot\dot{1}8$ and $31{\cdot}\dot{7}$.

(5) (i.) Express 1s. $1\frac{1}{2}$d. as a decimal of £3.

(ii.) What fraction of 1 mile 3 fur. 2 po. is 5 fur. 5 yds. ?

(6) Find, by Practice, the value of 11 oz. 16 dwt. 20 grs. of gold at £4 2s. 6d. per oz.

(7) What will £4,628 amount to in $3\frac{1}{2}$ years at $2\frac{1}{2}$ per cent. per annum, Simple Interest ?

(8) A cyclist, riding uniformly, covers a distance of 37 miles in 3 hours 5 mins., and a train, moving uniformly, covers the same distance in 49 mins. 20 secs. ; how much further will the train travel in 5 hours 35 mins. than the cyclist ?

(9) Obtain the square root of 22221·8649.

(10) A room is 7 metres long, $5\frac{1}{2}$ metres wide and $3\frac{1}{2}$ metres high ; what will be the cost of whitewashing the walls at 30 centimes per square metre ?

If £1 = 25 francs, what will be the cost in English money ?

(11) 35 per cent of a firm's gross profit is devoted to the maintenance of the business and 10 per cent is annually set apart for a reserve fund ; the remainder is divided equally amongst three partners ; if each gets £440 a year, what amount is set apart annually for the reserve fund ?

Answers.

(1) A, £3 8s., B, £2 15s., C, £1 16s. 8d.

(2) 27, 220 sq. yds. (3) (i.) 1 ; (ii.) $\frac{9}{14}$.

(4) 24·92663, ·00063 ; 5·$\dot{7}$. (5) (i.) ·01875 ; (ii.) $\frac{5}{11}$.

(6) £48 16s. $11\frac{1}{4}$d. (7) £5,032 19s. (8) $184\frac{1}{4}$ miles.

(9) 149·07. (10) 26 fr. 25 c. ; £1 1s. (11) £240.

Algebra.

(1) Simplify $(p-q)[p+2\{p-(q+r-\overline{p+q})+r\}+5q]$.

Subtract $\frac{2}{3}a+\frac{1}{4}b-\frac{3}{8}c$ from $\frac{3}{2}a-\frac{1}{6}b+\frac{5}{8}c$.

(2) Divide the product of $x^2-7x+12$ and $3x^2-x-14$ by x^2-2x-8.

(3) Factorise the following :

(i.) $3x^2-7x+4$; (ii.) x^3-27 ; (iii.) $3(x^2-4)-x(x+2)$; (iv.) $ab(x^2+1)-x(a^2+b^2)$.

(4) Find the H.C.F. of

$x^3-15x^2+71x-105$ and $x^3+7x^2-9x-63$.

(5) Simplify :—

(i.) $\dfrac{x-5}{x^2-5x+6}-\dfrac{3x-2}{x^2-7x+10}+\dfrac{2x+3}{x^2-8x+15}$;

$$\frac{y^3-2xy(x+y)}{x^3+y^3}$$

(ii.) $\dfrac{\quad}{3x-2y}+\dfrac{\quad}{2x-3y}$

(6) Solve the equations :—

(i.) $7(x+7)-3(3-x)=5(x+5)-4(x-6)$;

(ii.) $\dfrac{3\frac{1}{4}-4x}{5}-\dfrac{\frac{x}{5}+4}{2}=\dfrac{4\frac{1}{5}+6x}{4}$;

(iii.) $\dfrac{z-3x-2y}{5}=\dfrac{4x-y+3z}{18}=x+4y+2z=1$.

(7) (i.) A man can do a piece of work in a hours and a boy can do it in b hours ; how long will they take to do it, if they both work together ?

(ii.) A picture is sold for £x at a profit of 50 per cent. ; at what price was the picture bought ?

(8) A bookseller finds that by selling books at 2d. less than the published price he will gain 2s. per dozen copies ; if he buys fifteen copies at the published price of twelve, what is the published price of the book ?

(9) Solve :—

(i.) $2(x-3)(x+2)-4(x+4)(x-1)=(x+3)(x-4)$;

(ii.) $\dfrac{1}{2x-3}-\dfrac{1}{3x+2}=\dfrac{11}{30x}$.

Answers.

(1) $5p^2-5q^2$; $\frac{5}{6}a-\frac{5}{12}b+c$. (2) $3x^2-16x+21$.

(3) (i.) $(3x-4)(x-1)$; (ii.) $(x-3)(x^2+3x+9)$; (iii.) $2(x+2)(x-3)$; (iv.) $(ax-b)(bx-a)$. (4) $x-3$.

(5) (i.) $\dfrac{13}{(x-2)(x-3)(x-5)}$; (ii.) $\dfrac{3x^2-7xy+3y^2}{3(x^2-y^2)}$.

(6) (i.) 1 ; (ii.) −1 ; (iii.) $x=1$, $y=-2$, $z=4$.

(7) (i.) $\dfrac{ab}{a+b}$ hours ; (ii.) £$\dfrac{2x}{3}$. (8) 1s. 8d.

(9) (i.) 1 or $-5\frac{1}{3}$; (ii.) 6 or $-\frac{11}{36}$.

Euclid.

A.—BOOK I.

(1) On what axiom does the method of "proof by superposition" depend ?

Enunciate and prove any proposition you may know of which can be proved by this method.

ABCD is a square and points E, F, G, H are taken in its sides at equal distances from its respective angular points ; show that the figure EFGH is also a square.

(2) Any two sides of a triangle are together greater than the third side.

The sum of the distances of any point from the three angular points of a triangle is greater than half the sum of the sides.

(3) Define a parallelogram, a rectangle, a square, a rhombus.

AC, BD are two straight lines which bisect each other at O ; show that the figure ABCD is a parallelogram.

Under what circumstances is the figure ABCD (i.) a square, (ii.) a rectangle, (iii.) a rhombus ?

(4) PQR is a triangle, right-angled at P ; cut off from the square described on QR a rectangular portion equal to the square on PQ, and show that the remaining portion of the square on QR is equal to the square on PR.

(5) ABCD is a rectangle in which the side AB equals twice the side AD ; then the bisectors of the angles at A and C trisect the diagonal BD.

Either B¹.—BOOK II.

(6) ABCD is a square, and AEFG, FHCK are the parallelograms about the diagonal AC ; prove that

(i.) the parallelogram FHCK is equal to the square on EB ;

(ii.) the gnomon BGK with the figure AEFG is equal to twice the rectangle contained by BA, AE.

(7) In every triangle the square on the side subtending an acute angle is less than the squares on the sides containing that angle by twice the rectangle contained by either of these sides, and the straight line intercepted between the perpendicular let fall on it from the opposite angle, and the acute angle.

Enunciate the corresponding proposition for an obtuse-angled triangle.

By the help of these propositions prove that the sum of the squares on two sides of any triangle is equal to twice the square on half the third side, together with twice the square on the median which bisects the third side.

Or B².—BOOK III., PROPS. 1-19.

(6) Define a circle and the chord of a circle.

The straight line which bisects the chord of a circle at right angles passes through the centre.

Prove that the centres of all the circles which pass through two given points lie on a fixed straight line.

(7) Equal chords of a circle are equally distant from the centre.

Show also that they touch another circle which has the same centre as the first.

French.

(1) Translate into English :—

Mon père voulut nous conduire lui-même dans un quartier où nous avions chance de faire de bonnes recettes, et nous traversâmes tout Londres pour arriver dans une partie de la ville où il n'y avait que de belles maisons avec des portiques, dans ces rues monumentales bordées de jardins. Dans ces splendides rues aux larges trottoirs plus de pauvres gens en guenilles, et à mine affamée, mais de belles dames aux toilettes éclatantes, des voitures dont les panneaux brillaient comme des glaces, des chevaux magnifiques que conduisaient de gros et gras cochers aux cheveux poudrés.

(2) Give the masculine terms corresponding to—*madame votre mère*, *Sa Majesté la Reine*, *cette fille*, *la femme de Monsieur R.*, *la cantatrice.*

(3) Write in French words—101, 172, 200 pages, 210 pages page 200, William I., William III., $\frac{1}{2}$, $\frac{1}{3}$, $\frac{3}{4}$, $\frac{5}{6}$.

(4) Give the comparative and superlative of—*bien*, *bon*, *peu*, *petit*, *mal*, *mauvais* and *grand.*

(5) Give the third plural feminine of the imperfect indicative, future, and present subjunctive of—*recevoir*, *être aimé*, *se laver*, *ne pas aller*, *voir* and *courir.*

(6) Translate into French :—

The Danish king won part of the ground for himself, gained much riches, and made a great name as a brave leader. He had married an English wife, a wise and good woman who is still remembered in Denmark. In his old age the king remained at home and his sons went to war. The eldest son, a fine young man, was killed in battle, and his father died of grief.

THIRD CLASS COLLEGE OF PRECEPTORS EXAMINATION, DECEMBER, 1900.

Revision Test Papers.

Copies of any of the following test papers can be obtained in a form suitable for distribution in class. The reprinted papers are sold in packets of twenty-five, at a cost of 6d. net for each subject. The papers may be ordered through a bookseller, or they may be obtained (post free) from the Editors of The School World, but in the latter case all orders *must be prepaid.*

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New Testament—S. Luke.

(1) Who were Zacharias, Zacchæus, Herod the Tetrarch and Levi?

(2) How did Jesus teach the extent of our duty to our neighbour?

(3) Relate what happened in the house of Simon the Pharisee.

(4) What were the chief incidents of the Great Forty Days?

(5) Describe and discuss the examination of Jesus (1) by Pilate; (2) by Herod.

(6) State in what connection the following words were used and discuss them briefly:—

(*a*) No man putteth new wine into old bottles;
(*b*) Good Master, what shall I do to inherit eternal life?
(*c*) Blessed is he whosoever shall not be offended in me;
(*d*) The house and lineage of David.

Grammar.

Study the following questions before answering:—

"The king gave the quest to Gareth, who was knighted and accompanied Lynette, who used him very scornfully at first. But every victory which he gained made her to look less contemptuously on him. Indeed, so boldly did he fight in her cause that her indifference, which had occasioned him much pain at first, gradually turned to deep anxiety for his well-being, and the happy result of his successes was that the princess asked him one day whether he would not choose to marry her, if the consent of the king were obtained."

(1) Say what parts of speech the following words are, and give the reason for your answer in each case:—*quest, first, much, his, if, obtained.*

(2) Parse fully:—"Every victory which he gained caused her to look less contemptuously on him."

(3) Give the subjects of:—*gave, accompanied, made, turned:* and the direct objects of:—*used, gained, occasioned, choose.*

(4) What are Abstract Nouns? Name those formed from *happy, deep, just, scarce, wise.*

(5) Give the present and the past participles of:—*accompanied, look, be, choose, marry.*

Write out in full the Future tense of *obtain.*

(6) What is a Phrase? Write out three phrases in the above passage, and say to what word each belongs.

(7) Enumerate the conjunctions in the above passage and show what they join.

Show that a pronoun can join sentences.

(8) Write with proper capitals, stops, inverted commas, &c:—king richard listened to the prelate's reasoning with a downcast eye and a troubled look i cannot tell said he how it is with me but methinks these cold counsels of the princes of christendom have infected me too with a lethargy of spirit so saying he turned from the archduke with an air rather of dignity than scorn and retired into the royal pavilion.

English History.

1066-1603.)

(1) **Take five** (not more) of the following dates, and assign important events to each:—1086, 1138, 1170, 1265, 1297, 1360, 1453, 1529, 1558, 1588.

(2) **Either** (*a*) Write a life of Robert of Normandy, showing his connexion with English affairs,

Or (*b*) Sketch the reign of King Stephen.

(3) **Either** (*a*) Enumerate the dominions of Henry II., and state which of them remain under the sway of Queen Victoria,

Or (*b*) Tell the story of Henry II.'s "Conquest of Ireland."

(4) **Either** (*a*) Give an account of the struggle between Henry III. and the Barons,

Or (*b*) Trace the course of Edward I.'s dealings with Scotland.

(5) **Either** (*a*) State briefly the claims of Henry IV., Edward IV., and Elizabeth to the English throne,

Or (*b*) Write an account of the Wars of the Roses.

(6) Describe carefully **one** of the following:—

(*a*) Henry VIII.'s relations with the Papacy.
(*b*) The interval between the death of Henry VIII. and the accession of Elizabeth.
(*c*) Elizabeth's relations with Spain.

Geography.

[Of the nine questions answer *six* only: *one of the maps must be done*, and both may be done.]

(1) Draw a map of the six northern counties of England:—insert the rivers Tyne and Ouse; the Solway Firth and Morecambe Bay; Lake Windermere; the mountains; and Hull, Leeds, Liverpool, Preston, Carlisle.

(2) Draw a map to show the positions of the following:—Caucasus Mountains, the Crimea, the Lower Danube, Constantinople, Odessa, the Balkan Mountains, and the Sea of Marmora.

(3) Explain *watershed, plain, glacier, volcano, river-basin.* Give European instances.

(4) In what respects are the following noteworthy: Staffa, Giant's Causeway, Snowdon, the Broads, the Riviera?

(5) What differences are there in the climate of the West of Great Britain and that of the East. Account for them.

(6) Where are Perm, Madrid, Rome, Orleans, Hammerfest? State how you would go to each from London.

(7) In what parts of the British Isles are the following manufactures carried on:—cotton, linen, earthenware, hardware?

(8) Describe a voyage from Liverpool to London, or from Cork to Glasgow.

(9) What are the chief fishing ports in the United Kingdom?

Arithmetic.

(1) Divide (i.) 6,493,712 by 837 by Long Division; (ii.) 165,973,524 by 56 by factors. Give each of your results in words.

(2) How much must be substracted from £16 7s. 9½d. in order that £1 13s. 7¼d. may divide it an exact number of times?

(3) What sum in English money is equivalent to one million American dollars, the value of a dollar being 4s. 2d.?

(4) Reduce 11 tons 2 qrs. 1 lb. 4 oz. to ounces, and 164,273 inches to miles, furlongs, &c.

(5) Find, by Practice, the cost of 6,484½ tons of metal at £84 7s. 10d. per ton.

(6) The construction of 1 mile 220 yards of a tramway costs £2,268, what is the length of the route if the whole cost be £10,080?

(7) (i.) Add together $3\frac{7}{10}$, $4\frac{2}{5}$, $1\frac{7}{15}$, $9\frac{3}{20}$, $5\frac{11}{30}$;
(ii.) Subtract $161\frac{4}{5}$ from $178\frac{3}{4}$.

(8) (i.) Assign a meaning to each of the digits in the number 32·124.
(ii.) Express ·31875 as a vulgar fraction in its lowest terms.

(9) Multiply ·00025 by 640 and ·064.

(10) If a metre be equal to $39\frac{3}{8}$ inches, how many miles are there in 8 kilometres? [1 kilometre = 1,000 metres.]

Answers.

(1) (i.) 7,758+266; (ii.) 2,963,812+52. (2) £1 5s. 4¼d.
(3) £208,333 6s. 8d. (4) 395,156 oz.; 2 mi. 4 fur. 29 po. 5 yds. 1 ft. 11 in. (5) £547,237 15s. 3d.
(6) 5 miles. (7) (i.) $24\frac{1}{12}$; (ii.) $16\frac{19}{20}$. (8) (ii.) $\frac{51}{160}$.
(9) ·16 and ·000016. (10) 5 miles.

Algebra.

(1) Explain the difference between $a+4$, a^4 and $4a$.

Find the numerical value of $b^2(c-d)+ab(c+d)-x^2(a+b)$ when $x=1$, $a=2$, $b=-1$, $c=-2$, and $d=0$.

(2) Simplify the expressions:—

(i.) $3-2\{1-2[3-2(4-5+3)]\}$;
(ii.) $x(x^2+2)-x^2(x-2)+2(x-x^2)$.

(3) Multiply $3x^2-4x+3$ by $4x^2-3x-4$.

(4) Divide $x^6-x^4+x^3-x^2-2x-2$ by x^3-x-1.

(5) Solve the equations:

(i.) $4(x+8)-2(x-7)-3(x+2)=6(x+1)-1$;

(ii.) $\frac{x-8}{3}-\frac{x}{8}=\frac{x-9}{4}$;

(iii.) $3\{(x-2)(4x+3)-10\}=(4x-9)(3x-4)$.

(6) Find *all* the factors of: (i.) a^3b-ab^3; (ii.) $x^2-7x-30$; (iii.) $x^2+xy-x-2y-2$.

(7) Eggs cost p pence a dozen and are sold at the rate of s shillings a score; what will be the total profit in pounds on 360 eggs?

(8) At a silver collection amounting to £3 6s. there were an equal number of crowns, half-crowns and florins, and an equal number of shillings, sixpences and threepences; if the number of crowns was one-fourth of the number of shillings, how many coins were there altogether?

Answers.

(1) 1. (2) (i.) -3; (ii.) $4x$. (3) $12x^4-25x^3+12x^2+7x-12$.
(4) x^3+x^2+2. (5) (i.) 5; (ii.) -10; (iii.) 3.
(6) (i.) $ab(a-b)(a+b)$; (ii.) $(x-10)(x+3)$
(iii.) $(x+y+1)(x-2)$. (7) $\pounds\left(\frac{9s}{10}-\frac{p}{8}\right)$. (8) 60.

Euclid.

BOOK I., PROPS. 1—26.

(1) Give definitions of a plane surface, a plane angle, a plane figure, a circle and a square; draw figures to illustrate your definitions.

(2) The angles at the base of an isosceles triangle are equal. Enunciate the converse of this proposition.

ABCD is a quadrilateral having the side AB equal to the side AD; if, also, the angle ABC is equal to the angle ADC, show that the side BC must be equal to the side DC.

(3) Divide a given finite straight line into two equal parts.

(4) If two straight lines intersect, every pair of adjacent angles so formed is equal to two right angles.

(5) If one side of a triangle be greater than another, then the angle opposite to the greater side shall be greater than the angle opposite to the less.

(6) If from the ends of a side of a triangle there be drawn two straight lines to a point within the triangle, then these straight lines shall be less than the other two sides of the triangle, but shall contain a greater angle.

Make use of this proposition to prove that the sum of the distances of any point within a triangle from its angular points is less than the sum of the sides of the triangle. (Hint: Take each side of the triangle in turn, and add your results.)

(7) Enunciate the proposition which proves the equality of two triangles having two angles and a side equal in each.

French.

(1) Translate into English:—

Je viens de visiter les prisonniers français dans les forteresses allemandes. Un d'eux me demanda si j'étais de Paris et si j'y retournerais. Je lui dis, "Vous avez des parents (*relatives*) à Paris?" "Oui," me répondit-il, "c'est cela, vous avez compris . . . J'ai un garçon de quatre ans. Je ne l'ai pas vu depuis dix-huit mois. Sa mère est morte à Paris, pendant le siège, et l'enfant serait resté seul, si de brave gens du quartier ne l'avait pas recueilli. Je crois qu'il est bien soigné; mais si vous pouviez aller voir le petit et m'écrire après pour me donner de ses nouvelles, je serais si heureux."

(2) Give the French for—He was perceiving. Shall I sell it? That he may not be. That he might have. Has he not seen it. I should not give it him. Look there.

(3) Give the feminine of—*nouveau*, *blanc*, *grand*, *ce beau homme*, *ils sont heureux*; and the plural of—*œil*, *bail*, *canal*, *général*, *ma sœur y va demain*.

(4) Translate—That house is 81 feet high. It has 22 windows and three doors. Mr. C. lives there with his pretty little daughter. The garden is mine, but the house is his. It was built before George I. died.

(5) Write the 2nd person singular and plural of the present and imperfect indicative of—*être*, *avoir*, *entrer*, *rendre* and *aller*; also the third person plural of the future of—*finir* and *apercevoir*.

(6) Write the infinitives and participles of—*as*, *es*, *reçut*, *mangeront* and *punissaient*.

(7) Translate into French:—

When I was visiting a German fortress I saw some French prisoners. I spoke to one of them and told him that I came from Paris. The poor man had a little son there whom he had not seen for 18 months. I promised to go to see him and tell his father how he was. The prisoner thanked me, and I departed for Paris.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

The Teaching of Spelling.

WE are all very much interested in spelling, and I am sure your readers will have much to say to you or to themselves on the paper contributed to THE SCHOOL WORLD by the writer of "Common Sense in Education." "Uncommon nonsense" in spelling might be the name of many of our practices. Why do we want to spell correctly? Surely there is only one reason. Because we wish to write correctly. No one deprived of the power of writing or typewriting need spell correctly. The written word has to "look right" in the letter, the essay or the printed page. The eye of the correct has to be satisfied. The learner, therefore, must be led to rely on the visual impression, and the correct impression can only be made by constant repetition, not verbal repetition, but visual repetition. Thus reading aloud does more for the spelling of ordinary words than memorising. Constant reading and constant writing (or copying from a book) are required rather than learning "by heart."

Copying is specially valuable, for here the eye plays sad pranks if not carefully looked after. Indeed, "copyists' errors" have been reduced to lists. But granted that spelling of ordinary words is not so very formidable an ogre, if attacked by eye and hand, how are we to deal with the numerous English words which are so very extraordinary? Here we are bound to call in the aid of memory, for the principle of association of ideas leads us in a wrong direction. I have heard of a schoolmaster who uses what he calls "the forty thieves," a list of forty words called thieves because the knowledge of the correct spelling of these words has stolen grants. I have not seen the list; but anyone can make his own. I suppose that *siege* and *thief*, *seize* and *foreign* would be four of them. "Forty thieves" for each class would soon be caught. The large number of ordinary words, and the constantly recurring catchy words, have thus been dealt with. There remain the uncommon words which are to be learnt only from reading. Of course, if children of fourteen are to be expected to spell and to know the meaning of *ukase*, *ipecacuanha*, *cassowary* and *muezzin* (to quote from a well-known spelling-book), we must make long lists and compel the children to memorise. Their reading is not likely to cover words of this class. But to set such words to children is on a par with asking beginners for the ablative of *rete* and the Latin for "twice two are four." With a good use of the reading book no ordinary word need escape the child's notice. And this brings me, rather late, I fear, to the subject of my letter.

All English work should be based on the reading book. No grammar books, composition books, spelling lists are needed; the reading book supplies them all. But the reading book must be interesting, not scrappy. Geographical and historical readers are out of place in the English lesson: they belong, if anywhere, to the geography and history lessons. But the reading book is literature from the very beginning of the child's life. Every class should have its library, a library consisting of thirty copies of some eight or ten works: three or four hundred books in all, on shelves, locked or open. If there be six classes in a school where the oldest children are thirteen, sixty different reading-books will have been read and re-read by the time the child has travelled to the top of the school. Among such books will be the best-known fairy tales (say ten different works), "Gulliver," Defoe's "Plague and Fire of London," "Pilgrim's Progress," the "Parables of the New Testament," the "Lays of Ancient Rome," "Reynard the Fox," the "Mythology of Greece and Rome," stories from Dickens and Scott, and the best-known easy poems of Hood, Wordsworth, Scott and many other poets (Shakespeare and Milton being designedly omitted as unsuitable). This is not a bad beginning for a child; and the difficulties that have been built round paraphrasing, analysis, spelling, composition and the like shrink wonderfully when these subjects appear in their true light—as mere hangers-on of reading and literature. I am aware that along with the reading book is required a person who knows enough of his trade to be able to use it. The cost of such a set of libraries (*credite experto*) is covered by three five pound notes. Is it too late, even now, to try to drag poor Literature out of the shade to which she has been driven by examiners and examinations? Perhaps some future historian of education will comment on the neglect of literature and the apotheosis of spelling and parsing, and will be able to say of our present systems as a young friend of mine said of "the Tin Virgins," "their fulesh lamps went out."

A. B.

I HAVE read with much interest the paper on "Spelling: Procedure and Process," by Mr. Barnett, and I shall be grateful if you will allow me to make a few remarks upon the subject.

The question of Spelling seems to be so closely allied to that of Reading that it is difficult to separate one from the other. Indeed, the two subjects should go hand in hand. It is of extreme importance in the teaching of reading that the child should be trained to habits of careful observation, and that he should be allowed to exercise his powers to the fullest possible extent. For it is only too true, as Mr. Barnett says, that "A great deal of our most earnest instruction is lamentably inept and futile, because we are so far from being convinced that intellectual progress is absolutely dependent on intellectual effort."

In order to encourage this intellectual effort on the part of the children, we must simplify our subject so as to make it possible for their efforts to be crowned with success; otherwise they will become despondent, and will lapse into the regrettable condition of being contented to be told. Successful activity will do much to quicken and sustain interest. We must therefore give the children every opportunity for finding out as much as they can for themselves, and this again will cultivate habits of careful observation. Interest and observation will supply the most valuable aids to correct spelling, particularly in a language like our own which has drawn from so many sources and consequently has such varied forms. If the children are led to discover the sounds of their spoken language, and are allowed to print each symbol as it is presented to them, it is surprising with what ease they can print, and later write, from dictation, not only words which they have already seen, but also words containing regular sounds which they have never seen. It is wise to let them know from the outset that there are departures from strict regularity, otherwise the help of the eye will not be called in sufficiently soon. The varied consonant forms (*e.g.*, *c*at, pa*ck*, min*ce*, *Ph*ilip, *f*ish) will supply this need in the early stages, and the variety of vowel-forms will continue this eye-training later. But we must beware of presenting these difficulties too hurriedly, if we wish to avoid confused impressions.

May I put in a plea for the single pupil for whom Mr. Barnett proposes the "look-and-say" procedure? I have known many cases in which children have taken several years to learn by this means, and, even if it were generally successful as far as the reading is concerned, has it done much to educate the child? Should not intellectual effort be encouraged in the individual quite as much as in the class? I wish most earnestly to reject the idea that exceptional skill is required for the handling of the plans suggested in my book "On the Teaching of English Reading," with its accompanying "Walter Crane" Readers. The essential point is that the teacher should allow the children to share in the work, and the brightness they will bring to it will never allow it to become tedious. The "machinery," which Mr. Barnett thinks of doubtful utility, has been especially devised to allow of that many-sided activity in which children so greatly delight, and as a means by which they may gain clear ideas about their language in a manner which will appeal to them. Their classification of the sounds in the Tabulating Frame gradually reveals, much to their amusement, the vagaries of certain symbols (*e.g.*, *c* in "cat" and *c* in "mince"), and the locality of each in the frame will prevent any confusion concerning them (*e.g.*, *c* in "cat," being a guttural, is placed farther back than *c* in "mince").

In view of the anomalies of our language and of the "flowers of mispronunciation," of which Mr. Barnett has given some interesting specimens, I cannot emphasise too strongly the necessity of training the children to careful visualisation of words. Prevention is better than cure, and we should never give them an opportunity for making a mistake in spelling if we can avoid it. When a child is in doubt, it is wiser to print or write the word clearly on the blackboard than to dictate its elements.

In addition to transcription, which is certainly a valuable aid to spelling, I would suggest the practice of printing, and later writing, from dictation. This can be done from the outset, for we can first dictate sounds in connection with words, then words from a story told, then a single sentence, and lastly passages. This trial of strength adds an interest to dictation which is wanting in transcription, and it is quite practicable if the children are being trained to a careful study of words. Under such circumstances they are led almost unconsciously to classification, and this is further helped by the selection of a type-word around which the "party" will circle. (I cannot enlarge upon this point here, but it is worked out fully in the forthcoming Reader of my series.)

The association of the right meaning with a word is a great help to correct spelling, and this can be taught by oral and pictorial composition, supplemented by intelligent reading. It is advisable not to hurry on to written composition until the children have sufficient command of the language to do it with comparative accuracy. For we cannot realise too fully that the chief enemy to accuracy in spelling, or in any subject, is a habit of carelessness. We can scarcely blame the children for acquiring this habit if we plunge them into a sea of difficulties before they have learned to swim.

So important are the first steps that we cannot give too much thought to our language and the little learners. The more earnestly we study them the more will the work become a mutual joy.

NELLIE DALE.

The Teaching of Science.

THERE are a good many people who feel much contempt for the pursuit of money as the chief end of life, but when they pursue other ends and do not get much money are discontented. In fact, as Emerson has pointed out, the would-be righteous are too often craving to have the rewards of the wicked without the costs of wickedness. The would-be heuristic teacher is sometimes, I fear, in a similar case. He wishes to avoid aiming at "results" and then is discontented that he does not get them. A boy up to 15 need, it seems to me, know very little of "the classical experiments of the masters in science." Let him know how to explain a simple phenomenon, and how to arrange with common sense an experiment to test his own first explanation. No amount of "classical experiment" teaching will teach him how to do that. To learn ingenuity in surmounting small difficulties is of use to everyone; the facts of science may or may not be. How many average adults owe anything to their school science?

My experience is that the young boy of 9 or 10 can be readily got to think; the boy who has had considerable school training on ordinary lines can only rarely be got to think at all. Perhaps I may be permitted to refer "S. K." to my article in THE SCHOOL WORLD for October, 1899, on "The Quantitative Shibboleth." I have there sketched out a scheme of a "heuristic" chemistry course for boys of, say, 12 years old, which I find works admirably. I should be very glad to give "S. K." any further help in my power.

It is not necessary, I think, in all the science work to exclude statements of facts by the teacher. But I believe that the longer one's experience the fewer these become. For instance, the whole arrangements of fertilisation in the "cuckoo-pint" could only be worked out heuristically by great expenditure of time, but among the specimens brought in by the boys some will probably have midges enclosed by the spathe, and an enquiry as to what they are doing there may easily lead to a whole train of observations. In the case of chemistry, however, I consider departure from purely heuristic methods as both more needless and far more dangerous. I do not think any diet so indigestible or productive of so much derangement as a diet of chemical facts. The boy gains only a muddle-headed reliance on authority. When a boy begins to specialise after a previous course of common-sense training, then he may begin to use books and facts more freely. At what period this specialising should begin I will not venture to say. The age should, I think, vary with individual capacity. Up to that point let the boy simply learn such common sense as will be useful in and add interest to, his every-day life.

HAROLD PICTON.

Ingleside, Clacton-on-Sea,
September 10th, 1900.

YOUR correspondent "S. K." complains that the so-called heuristic method of teaching science breaks down at the stage at which "an acquaintance with the classical experiments becomes necessary."

One could reply better if he had expressed himself more definitely and concretely. Of what particular classical experiments is he thinking? And at what stage does he consider an acquaintance with any of these necessary? Some of the "classical experiments of the masters of science," *e.g.*, those of Lavoisier on Combustion, or Newton in Optics, furnish the best of all material for the juvenile investigator's own exploitation. Of others, again, such as the determination of some of the great physical and chemical constants, one or more may be made the *terminus ad quem* of his own enquiries, and may be introduced in correction or corroboration of his results. Of others he may be allowed to make use to bridge over gaps in his own resources; while there are very many which lie quite outside the pale of school science. I fear "S. K." has not considered the matter in detail, or he would not have made his complaint in such general terms. Speaking also generally, one may say of his difficulty as of many others, *solvitur ambulando.*

To require of the heuristic method that it shall dispense with a study of historic science, and enable the pupil to find out "all things for himself," is obviously to ask too much.

On the other hand, to suppose that the method is only suitable for beginners, and cannot be pursued in the later stages of school work, is to credit it with too little. Under judicious guidance it can be made to give a boy a sound and intelligent knowledge of the material out of which science is constructed, and to introduce him, eager, curious, and sympathetic, to the great guides whose feet have trodden out the path by which he has travelled.

Perhaps an instance, which actually occurred, of the use made by followers of this method, of a classical experiment, may help "S K."

Four boys, who had had two terms' work in a physical laboratory, but to whom text-books were quite unknown, were led to make an investigation into the rate of expansion of water when heated from 0° C. upwards.

They used two different methods; both, however, involving the expansion of glass, and got good curves for the *apparent* expansion of the liquid. They saw quite clearly the relation between the apparent and real expansion, and endeavoured to get the expansion of the glass by finding with callipers the increase in diameter of the bottle and bulb employed from 0° to 60° C.

The results were not exact enough to please them, but as they had no better means of determining linear expansion, they were at a loss how to proceed. In discussing the matter with their master, the latter casually remarked that some Frenchman had, he thought, determined the expansion of mercury independently of the vessel containing it. The boys ransacked the school library, and presently appeared with a diagram, copied from Jude's "Physics," of Regnault's apparatus. They announced their intention of constructing "something of the sort." They were, however, advised not to try, as it would be a pity to do over again what had been so well done by M. Regnault, and they were told that it would be quite right and proper to use his results, if they made proper acknowledgment. They accordingly "lifted" Regnault's table into their own books, and being supplied with a few pounds of mercury, determined therefrom the mean coefficient of expansion of their bottle and bulb, and thence the curve for the real expansion of water. "We owe this table," they remarked, under asterisks, "to M. Regnault, a Frenchman, who was once a draper's assistant."

Would "S. K." call this a breakdown of the heuristic method? Or does he know any way in which boys could have been better led to appreciate a classical experiment?

Undoubtedly the method has its drawbacks. The "investigation" above mentioned occupied the better part of a term, during which, no doubt, the boys might have read through some little text-book, or pottered through a course of ready-made "experiments" on "heat."

It also cost the master, who worked through all their weighings in his spare time, and devised several necessary precautions, a good deal of labour. But he finds that a very little of this sort of work goes a very long way. Not only is it never forgotten, but it seems to confer a power that is not acquired in any other way. The pupil's mind gains a freedom, a power of seeing things for itself, an alertness and adaptability in turning to fresh matter, which make the great gaps in methodic knowledge of comparatively little importance. For, after all, the test of knowledge is not what one has done, but what one can do. I have more than once been astonished at the ease with which boys, who have only worked on this plan within a very small range, have been able to grasp the bearings of experimental work in quite another department, in which perhaps they were called upon to assist. Their thoughts have seemed to move in advance of one's explanations, and their eyes to see things and processes in themselves, and not through the mists of conventional terminology.

Of course, a very large demand is made on the ingenuity and manipulative skill of the teacher. He must be able to do things that the boys can not, but desire to do, and if, after twenty years' experience of science teaching I may claim to give advice, I would impress upon younger teachers the extreme importance for this sort of work, of expertness in such matters as, say, glass-working, and the use of tools. Not so much because one needs in these days to make apparatus, as that one cannot use it properly or adapt it unless one knows practically how to make it.

There is another requisite which I should like to mention. It is that the teacher should have had some experience of higher work in which absolute cleanliness, accuracy and precision are necessary. The simplest experiment should be done as perfectly as the means at our disposal allow. The *style* of our work in science is as important as it is in Classics or Mathematics.

May I give a simple example, which perhaps may also serve as an illustration of "S. K.'s" complaint? A short time ago I saw a teacher with a class of boys (it was a "model" lesson in science) perform one of the most beautiful of all elementary experiments—Torricelli's—but with a tube and mercury so narrow and dirty that the latter stood two or three inches below the normal height, was full of air-bubbles, and capped by a mass of black scum. He had to explain that "if," and "if," and "if," etc. Now there is *no excuse* for this sort of thing. The experiment is one which should be done, if I may say it, with a certain amount of *reverence*.

The tube should be wide enough, and made and kept chemically clean, the mercury should be perfectly pure and dry. It should be kept for the purpose, and never used for anything else. Then there will be no "ifs" or "oughts," but a speckless, silvery, mobile column, balancing, as it ought to do, the full atmospheric pressure. Secondary teaching in science should be of the highest class, and it is the teacher's business to avoid all "more or less-ness."

Will "S. K." and others pardon me if I hint that the breakdown of the heuristic method "at the stage at which it becomes necessary to introduce the classical experiments" may sometimes be due to the contrast between the style of these, and of those which the class have been so far performing. And may I express a hope that THE SCHOOL WORLD would encourage science teachers to send accounts of simple methods and experiments actually carried out by boys, which, if not "classical" in their importance, aim at being so in their style?

A. H. F.

YOUR correspondent, "S. K.," describes, in the September number of THE SCHOOL WORLD, certain difficulties which he has experienced in applying the heuristic method of teaching science, and I beg permission to state my present opinion on this important matter, at the same time acknowledging that a prolonged experience is certainly required in order to treat the subject with absolute fairness.

It appears to me, in the application of this method to the elementary student of average ability, that there are at least three sources of difficulty:—(i.) the time at the student's disposal is so limited; (ii.) his accuracy of work is nearly always too uncertain to allow the experimental results to be taken as a convincing proof of scientific laws; (iii.) sooner or later it is found that a deduction can only be arrived at by assuming some fact which the student has not yet proved. The method would appeal to me far more favourably if the student fully realised the universality of "experimental error," a factor which is so great in the work of beginners. It will almost certainly happen that his results are not quite concordant, and we ought surely to pardon him for seeking a cause for this in a possible uncertainty of scientific fact rather than in his own want of manipulative ability. A series of observations often ends in the student being told that his results *ought* to have been *so and so*, and that, had they been so, then the natural deduction would be *so and so*: the student will probably offer no criticism, but it by no means follows that he is permanently convinced. I have seldom found any elementary student whose manipulative ability is good enough to enable him to obtain results of sufficient accuracy to undoubtedly prove the conclusion which the experiment was originally intended to convey. It would seem far more economical for the student to cull knowledge judiciously from the facts already known to us, to build as speedily as possible a good foundation of knowledge combined with manipulative ability, and *finally* to cultivate the deductive faculty by repeating the main experiments of one or more celebrated but simple researches. Moreover, it always seems to me that time is wasted in teaching a young student to use obsolete terms, such as "inflammable air" and "phlogisticated air," when at an early date he will be required to abandon such terms in favour of those which are now current: in many cases the student will already know enough chemistry to tacitly wonder why he should not be allowed to speak of hydrogen by its recognised title.

H. E. HADLEY.

The Science School, Kidderminster.

As a science master with nearly ten years' experience, may I venture to give my opinion of the value of the heuristic method of teaching science for "S. K.'s" benefit?

For three years I was science master in one of the best Yorkshire grammar-schools, where great attention was paid to science and where excellent results were obtained year by year under the Science and Art Department. The teaching there was of the old-fashioned type; those of our lads who took an interest in science profited well by the teaching, and left school with a good knowledge of pure science; those boys who were not given to study, I am afraid, profited little by their lessons, for it always struck me that there was little really *educative* in the teaching. True, a boy learnt deftness of hand and nicety of operation in his practical work, but I always felt that the science teaching did very little more to develop his character than did, say, the history or the geography lessons.

For four years I was second master in one of the Welsh county schools, where I had both boys and girls as my pupils; for three years I tried the heuristic method, and I think I have found out some of its advantages and disadvantages.

First, it seems to me that if your object is to turn out a boy with as complete a knowledge of science as possible at the end of his school life, then the old-fashioned way is the best. More than this, sooner or later a boy must learn plenty of things in the old-fashioned way and by sheer grind; life is too short for him to learn all his science heuristically. I should like to know how long it would take the average boy to work through all the experiments in Perkin and Lean, and this by no means covers the whole of an elementary course of science.

But, notwithstanding all this, I must confess that I am in love with the heuristic method, but not as a method of teaching science. Its great value, to me, is that it is truly *educational;* it teaches a boy to be exact, thorough, painstaking and observant. If I understand aright, the great exponents of the heuristic method do not claim for it great value as a method of teaching science, though the information gained in this way is most valuable, as it becomes part and parcel of the individual; they exploit it, or, at any rate, so I take it, for the same reason that the educationist advocates manual training, because by it a lad becomes better fitted to play his part in the battle of life and is of more value to his country.

Just as in teaching a foreign language it seems to me that a combination of the old way and the new is better than either by itself, so it seems to me that the two methods must be used in order to give a boy a sound knowledge of science. Start with the new way, and when it has served its purpose, or when necessity calls for it, change to the old.

My experience leads me to think that the heuristic method has certain grave defects of its own which a teacher ought to be on his guard against, or the teaching may be worse than useless. I refer to the fact that in it everything depends on accuracy. Of course, this is where its educational value comes in. But one is apt to assume that if a person works through a book like that of Perkin and Lean, then he will have obtained a fair knowledge of chemistry, and a valuable training as well. This is by no means necessarily the case, for it all depends on the way in which the work was done. Heuristic teaching makes very great demands on the teacher. He must insist on accuracy and thoroughness at the very first, and check every result of every boy, at any rate, at the first, till he is certain that his pupils' work can be relied upon, or the result of his teaching will only be that his boys have no knowledge of science but have had a splendid training in slovenly habits and slipshod work. We must realise before we start that a boy is by no means painstaking by nature and that our object is to make him so. Not a single bit of bad work ought, therefore, to be let pass; the lad must be shown that he is wrong and convinced that he has made a mistake that he might have avoided by the exercise of more care. Then he can go on to the next bit of work.

To my mind, a course of elementary physical measurements affords an excellent means of gettting that accuracy and thoroughness necessary before a lad should be allowed to take up more advanced work like chemistry. Before the course of measurements I would like to see a short course of cardboard modelling: here a lad learns to be accurate and thorough, and his mistakes are self-evident to him.

I fancy also that it is a mistake to try to teach heuristically from a book; the work must be made very real, and the class must be led on from step to step as they can bear it.

H. HAROLD ROBJOHNS.

Wotton-under-Edge,
Sept. 3rd.

As one who has taught science for many years, may I be allowed to say a few words on the above subject? For the purpose of written examinations there is much to be said for the old method of using the text-book. The progress made is apparently much more rapid, and there is much more opportunity for the practice of that very useful art—the art of answering questions. These two advantages have great influence on the results of the written examination at the end of the year. For the practical teacher whose reputation is at stake, and whose work is judged by the results of examination, the heuristic method seems very slow and unsatisfactory. The time spent seems quite disproportionate to the results obtained as expressed in writing. If it were possible to test, by written examination the amount of real knowledge obtained by each of these methods, then, I think, the heuristic method would clearly show its superiority; but it is not possible. By real knowledge, of course, I mean that which is assimilated, as distinguished from that which consists in being able to repeat what has been heard, or has been learnt from a text-book. I mean knowledge of the facts themselves, and not simply knowledge of the words which describe the facts.

A real knowledge of science can only be obtained by actually handling the apparatus, and performing the experiments with one's own hands. How, then, is time to be obtained for gaining that skill in answering questions, so necessary for success at examinations? Until the methods of testing work done are greatly improved, a compromise will be the most effective, not quite logical perhaps, but still the best thing to do in the circumstances. A careful selection of simple experiments should be made, to illustrate the chief scientific truths which are intended to be taught, a few extra ones being added to give employment to the more intelligent pupils. These should be worked by the students themselves, and carefully studied, on the "find out for yourself" principle. The teacher should supplement these by working the more difficult ones on the lecture-table. The success of this method depends to a large extent on the skill with which the experiments to be performed by the student are chosen, and dovetailed, as it were, with the lecture-table experiments. If the students are required to make full notes on all the work they do, and on what they see done on the lecture-table, the result, I think, will be entirely satisfactory both from educational and examinational points of view. A certain time must, of course, be set apart for answering questions as the work progresses.

A mistake often made by those who follow the heuristic method is to tax the patience of the pupils too much at the beginning by giving them experiments which take up too much time before a definite result is obtained. This further shortens the time available for driving home the lesson by cross-questioning, and concentrates the pupil's attention too much on the details of the experiment rather than on the scientific truth illustrated or proved thereby. Half-an-hour seems to be quite long enough for an experiment in the first year's course, as a rule, though there are many exceptions. As ability to perform experiments varies very much, it is not always easy to find employment for the quicker pupils, yet, by arranging to have a few extra experiments illustrating the same lesson, this difficulty may be overcome to a large extent.

I quite agree with your correspondent, "S. K.," in thinking that it is impossible to follow out the heuristic method in its entirety. As he most justly remarks, "we must adapt our teaching to the circumstances of the class and the apparatus at disposal;" but, even so, the principle of "find out for yourself" is a good working rule which, used with discretion, will enormously increase the educational value of science teaching.

G. S.

The Reforms in French Grammar.

THE annoying anomalies of French Grammar are known to all. Unfortunately, the only body who has the power of remedying them is the *Académie Française*, and that body moves with a velocity hardly perceptible. Therefore, in January last M. Leygues, the Minister of Public Instruction, formed a Commission for simplifying French orthography and syntax. This Commission was composed of eight scholars, among them MM. Gaston Paris and Gréard. Its conclusions were embodied in a report issued in June last and accepted by the Minister in July. These conclusions are not compulsory, for the *Académie* has not adopted them; but a ministerial decree says that in all schools and in all examinations the following *tolérances* will be counted correct, and henceforth all rules to the contrary will cease to be taught in all schools under the Ministry.

The chief changes and simplifications are as follow:—

(1) *Aigle*, *amour*, *orgue* and *gens* may be either masculine or feminine.

(2) In every case proper nouns may take the sign of the plural: *les Corneilles*, *les Virgiles*, *les Meissoniers*.

(3) All compound nouns may be written in one word, with an *s* at the end in the plural: *des essuiemains*, *des bassecours*, *des cheflieux*, *des timbrepostes*, *des chefd'œuvres*.

(4) The adjectives *nu*, *demi* and *feu* will agree with their

nouns, just like other adjectives, both before and after: *une demie heure.*

(5) The numerals *vingt* and *cent* may always take the sign of the plural when multiplied by another numeral: *quatre cents trente hommes.*

(6) *Mille* may always be written thus: *l'an mille huit cents quatre vingts dix.*

(7) *C'est* may always be used instead of *ce sont: C'est des montagnes et des précipices.*

(8) The past participle conjugated with *être* will agree with the subject, but when it is conjugated with *avoir* it may always be invariable: *les livres que j'ai lu.* The same rule will apply to reflexive verbs: *elles se sont tu.*

(9) In sentences after a comparative, *ne* need no longer be inserted: *l'année a été meilleure qu'on l'espérait.*

These changes are very radical, but modern language masters in England will be thankful for them. The only danger is lest the next Minister of Public Instruction should upset them by another decree. Let us hope the *Académie* will move before that is possible.

DE V. PAYEN-PAYNE.

OUR CHESS COLUMN.

No. 22.

THIS month I am able to give my readers a few particulars of the Chess Clubs at Manchester Grammar School and Merchant Taylors', London.

The former was formed about twenty years ago, and is at present in a very flourishing condition. The subscription is one shilling a term, but when six subscriptions have been paid one becomes a life-member. The income of the club is expended on prizes for the tournaments, new sets of men, and in running a league team. The Club has joined the Manchester and District Chess League Association and has a team in the "B" League. Last year the club had a fairly good season; it finished in the middle of the "B" League, winning three matches, losing three, and drawing one.

Two challenge cups and a medal are competed for annually by members of the club; the latter is given to the winner of the handicap tournament. The "sliding odds" tournament is the most popular at the school. In it there are about thirty classes, and the odds are decided by the difference between two players' classes. Each game that a player wins puts him up a class, and each loss puts him down one. This makes the tournament a very even one, and is a great help to the handicapping, as a player usually finds his proper level at the end of a season. Of course, there is a fixed order in which the games must be played.

The school has brought forward some very good players; in fact, five or six old Mancunians play every year in the Lancashire and Yorkshire match.

The present secretary is Mr. H. Bateman, to whom I am indebted for the foregoing particulars. It will be remembered that his club won seven out of eight games in our Inter-School Correspondence Tourney, and thereby became entitled to a set of loaded Staunton chessmen in mahogany case.

Mr. N. B. Dick, secretary of the Merchant Taylors' Club (to whom a similar set has been awarded), tells me that his experience leads him to believe that correspondence games should be left to two or three players only—"too many cooks, &c." Last year Merchant Taylors' beat St. Paul's School by 4 games to 1, but there have not been so many matches arranged as the chess players would have desired. The usual tournaments, handicap and otherwise, were played during the season, and the Secretary hopes that the winning of THE SCHOOL WORLD prize will arouse a greater interest in chess.

In future numbers I hope to give particulars of other school chess clubs.

The following game will serve for purposes of competition this month:—

	WHITE.		BLACK.
1.	P—K4.	1.	P—K4.
2.	Kt—KB3.	2.	Kt—QB3.
3.	B—Kt5.	3.	Kt—B3.
4.	Castles.	4.	Kt x P.
5.	R—K1.	5.	Kt—Q3.
6.	Kt x P.	6.	B—K2.
7.	B—Q3.	7.	Kt x Kt.
8.	R x Kt.	8.	Castles.
9.	Kt—B3.	9.	P—QB3.
10.	P—QKt3.	10.	Kt—K1.
11.	B—Kt2.	11.	P—Q4.
12.	Q—R5.	12.	Kt—B3.
13.	Q—R4.	13.	B—K3.
14.	R—Kt5.	14.	P—KKt3.
15.	Q—R6.	15.	P—Q5.
16.	Kt—K2.	16.	Kt—Kt5.
17	R x Kt.	17.	B x R.
18.	Kt x P.	18.	B—Kt4.
19.	Kt—B5.	19.	B—B3.
20.	Q—R4.	20.	B x B.
21.	Kt—K7 ch.	21.	K—Kt2.
22.	Resigns.		

Competitors must answer the following questions:—(Send in by October 25th.)

1. White by 14 threatened Kt x P. and mate. How?
2. At 19 why not Black B x Q.? Why not B x Kt.?

May I remind competitors that October 30th is the last day for receiving entries for the best game competition explained in previous numbers. A game, divided into opening, winning play, and end game (with variations) must be sent in.

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III.—Address all communications to

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THE TRAINING OF PROBATIONERS IN SECONDARY SCHOOLS.

By F. J. R. Hendy, M.A.
Headmaster of Carlisle Grammar School.

IN all schemes for the training of secondary teachers a probationary period of practical work in a recognised school is included as an essential part of the course. The necessity of experience of this kind is universally admitted, and its inclusion as one condition of a teaching diploma has gone far to reconcile those who have a rooted objection to "mere theory." In the school the probationer finds not merely a practising ground, but the opportunity of direct instruction by practical men. His time is spent in teaching under the supervision of experienced teachers and in hearing lessons given by them. There is ample opportunity for criticism and discussion, and he of course has the run of the school, and, besides formal instruction in teaching, has facilities for observing and taking part in the general life. Thus he is in the most favourable circumstances for exercising his nascent powers and gradually learning his trade; while the danger and waste of giving real responsibility from the first to untried men will be avoided.

Such work has its obvious limits even where the conditions are most favourable; and, for the present, until the training of younger men is recognised as a regular part of the duties of a school, favourable conditions will rarely be found. Schools in which the regular staff barely suffices for the ordinary routine can, with the best will in the world, do little or nothing. Others, more fortunately placed, are not always eager to undertake work which demands no inconsiderable labour and skill. Hence the profession is dependent upon the charity or the enthusiasm of individuals, and until the work is taken up by the schools as thoroughly as is the practical training of medical students by the hospitals, it will be impossible to draw up a scheme as definite and precise as that which is followed in the earlier stages of the course.

In the meantime the present is a good opportunity for asking what are the essential things which a probationer ought at this stage to learn? How can the limited opportunities available best be utilised? What is it that a student may derive from this part of his training and from this alone? From his theoretical work he brings to the school much that is valuable; a conception of the work before him, which may be vague and unpractical, but which is true and sound as far as it goes; practical experience, sufficient at least to enable him to face a class with some idea of what he ought to do with it and how he ought to set to work; and in present circumstances, while training is a purely voluntary matter, the mere fact that he has chosen to submit himself to such a discipline is a guarantee that he brings enthusiasm, devotion, humility, and the ambition to excel at his trade.

What, then, does he still lack? what ought the school to give him? So far as it is possible to express it in a single phrase, he lacks effectiveness; the art of surely producing the result desired. He has to learn to make his aims precise, definite, practical, and at the same time comprehensive and complete—to use means that are appropriate and sufficient, and to make the very best use of the time and resources at disposal. Young men often do good work from the first; they will, for instance, give an excellent series of lessons, irreproachable in form and spirit, but, at the end, the class knows little of the subject, and slight impression has in any way been made upon them. The schoolmaster's work is partly moral, partly intellectual, partly in relation to individuals, partly to a class or a house; it is a work of endless detail, but it demands a constant grasp of the whole scope and aim, and a consciousness of the effect of each separate stroke upon the finished result. And in all these ways the beginner must learn to be effective, fruitful, to produce results in the true and comprehensive meaning of the term.

Actual work in a school differs from anything that can be done in a practising class mainly perhaps in this; the schoolmaster's real work is continuous. Even a course of lessons lasts for a term or for a year, while the school life of a generation of boys extends over several years. The capacity for giving an excellent lesson or a short series of lessons is not enough to make a man an effective teacher; the training of character demands a still wider outlook and a more extended field of effort; and the art of effectiveness is really this, the art of attaining final success by a long series of efforts in detail. How is the great lesson to be learned? How are we, the seniors, to teach it?

Here, surely, is the real difficulty of the matter. *Docendo discimus*, and we cannot be sure that we know anything until we have succeeded in teaching it. This applies with tenfold force to the art of teaching. We have been teaching all our lives, but can we teach? Dare we hold up to others as the true art what we practise ourselves? The best of us will have searchings of heart before undertaking responsibilities so serious. We shall hesitate before offering ourselves as a model. In knowledge of theory and in appreciation of logical form and method, we shall expect the tyro to have the advantage of us; he has had the privilege of skilled instruction while we have slowly and painfully instructed ourselves. But in one point we ought in turn to have the superiority, and this will be just where he is deficient. We have fought before, we have seen the stricken field, and live to tell the tale. We have done things which he has only read and thought about, or tried to do in a tentative and imperfect way. To be effective on given lines is just what he wants to learn, and just what we ought to be able to teach him.

Hence it is of the utmost importance that the lessons at which the probationer is present should form a continuous course. He should see the whole process from beginning to end; the slow, patient study of details line by line and word by word; the frequent revisions, patching weak places; fixing and emphasising crucial points; the final rapid survey, gathering up the whole and driving it home, making it a part of the permanent mental endowment of the class. "Results" are a little out of favour just now. In the past we have neglected form and method, and we are in danger, in the re-action, of giving form and method too high a place. But results of the right kind can be the only real test of efficiency. The end of teaching is a permanent increase of knowledge and intelligence. It is quite possible to test these things, and they ought to be subjected to the most rigorous tests that can be devised. The percentage of marks gained in an examination is, after all, a very true test of teaching, if the examination is a reasonable one, and is based upon a fair consideration of the result that ought to have been attained. It is a test that a flabby or lazy teacher is always ready to evade or explain away, and it should be ruthlessly applied.

It will not, of course, be necessary that the probationer should see every lesson of the course; but he must see a sufficient number of the first or detailed kind upon which the final lessons are based and upon which the real grasp of the subject ultimately rests; and he must on no account miss those which come at the end, which weld into a firm and clearly-grasped whole the mass of details that have been studied. Lastly, he must be present at the oral examination upon the whole subject, and should read and estimate the answers to the final written examination.

The same lines must be followed in the lessons which the probationer himself gives. All the earlier should be in the presence of a senior until at least a fair proficiency is attained, and each lesson should be afterwards discussed; if sparingly used, judicious interruptions during the course of the lesson will often be of good service. In this way, by detailed criticisms and discussions, a beginner will learn to keep in view from the very beginning the result at which he aims, to make every word, every question and answer tell. He learns how to understand and manage each individual boy—how to keep the whole class hard at work and to carry it with him as he goes. The whole work will, of course, be thoroughly tested, orally and in writing, and by the end of it the beginner should be able to do in one lesson what at first would have taken three.

Practical—that is, really effective—methods are, of course, very important, but not less important is the question of aims. Every fairly competent teacher acquires in time methods which answer his purpose, which are efficient for the ends he has in view; but his aims are often inadequate and narrow.

To take two very simple examples—the teaching of a Greek play or of a period of history. The aims in each case are simple and obvious, and it might seem a waste of time to write them down. Yet how rarely are they fully attained, how rarely are they really attempted? It must have fallen to the lot of most of us to look over "subject" papers in which the translation is excellent, while the treatment of style and even of grammar is meagre and perfunctory, and the literary aspect of the work is altogether ignored. In a history paper, again, good results are often obtained if the questions are of the kind which begin "Write a short account of," "State what you know of," "Who and what were the following." There is commonly evidence of careful and laborious study of detail, but if we set questions which test the power or the habit of grasping facts in their logical or even in their historical order, good answers are rare. That teaching which neglects the highest aims is common is surely to be inferred from the frequency with which questions of the kind indicated above occur in public examinations. Often it is possible for candidates to pass in such questions alone—a direct encouragement to slipshod and piecemeal teaching.

In an important public examination of this year designed for boys between the ages of 16 and 19, the classical subjects set were eight "books," all masterpieces of the great authors: Vergil, Horace, Euripides, Homer; Cicero, Livy, Herodotus, Xenophon. But the only recognition of the literary and historical aspects of this excellent selection was represented by a single question on the legality of the execution of the Catilinarian conspirators. Pursued in this spirit, classical studies lose half their justification, and if we are to pretend to make our young men effective teachers we must impress upon them the question of aims. Those who profess the classics enjoy this great privilege that their work lies among literary masterpieces, among books that belong to the literature of the world. To be really effective their work must be charged with the consciousness of this. They have unique opportunities of opening to their pupils the door of literature and of art, and the "getting up" of any book must be directed to this as the great end.

If the discussion of the practical training of probationers tends to become a dissertation on teaching, the blame must be charged upon the circumstances of the time. It is useless for the schools to undertake to teach the art of teaching unless they are quite sure that their teaching is sound. And the danger is all the greater because, owing to the absence in the past of any theoretical study of teaching, and especially of method, the tendency has rather been to identify training with the study of method, and to make its aim a good model lesson. It is a great gain if a probationer can already give such a lesson before his practical work begins, but when this point is reached quite different problems present themselves. It is the business of the school to teach the difficult art of attaining solid and lasting results by a continuous series of lessons—results which shall be complete and comprehensive—draining dry the whole possibilities of the subject, and which shall be a permanent acquisition in the minds of the learners. Unless this is realised, practical training in the school will be little more than an addition, scarcely differing at all in kind, from the work of the training-school proper.

Another part of the schoolmaster's business which can be learned nowhere but in the school is the moral influence of the form-room and the moral responsibilities of the class teacher. It is hardly too much to say that from this point of view the form is as important as the house or the home, whether in negative possibilities of evil or in opportunities of good. Every house-master knows the difficulty of dealing with a boy who has got into a slack form and the powerful influence which a strong, judicious form-master can lend. "Oh! you feel quite different in Mr. So-and-So's form," was the explanation given by a boy to his house-master of a most blessed change which had come over his general demeanour on his promotion to a new form. And here, again, the probationer's work must be continuous to be profitable. He must learn by observation extending over a considerable period of time what can be made of a form in capable hands, and he must learn to place this aspect of his work on a level with the highest of his aims—to think of it as inseparable from his intellectual work. This is emphatically a lesson to be learned by actual experience, for moral results, results which are seen in character, are obviously less easily analysed than those which consist in a standard of intelligence or knowledge, and the art of attaining them is less easily communicated. But it is perhaps rather the fact of a teacher's moral influence that needs to be emphasised than the methods by which it is attained. In our boarding schools we draw too marked a line of distinction between the work of the form-master and that of the house-master, and we are too ready to assume that responsibility for character rests almost entirely in a boarding school with the latter, in a day school with the home. To produce the best results both must, of course, combine; but the form-master must play his part. His boys are with him for several hours every day, and they must learn from him lessons of the gravest import—lessons conveyed by the contagion of his own enthusiasm and energy, or by his lack of them. Habits of industry and courage, or of idleness and cowardice, are being acquired from the strength or the weakness of his discipline and inspiration; principles and habits of thought are being assimilated from the whole atmosphere of the form room, from the handling of the innumerable topics that must arise in the course of the daily lessons, of the innumerable little problems, ethical and intellectual, to which the daily life of the class gives rise.

Such are a few of the points which must readily occur if we try to answer the questions suggested at the beginning of this paper. We must at least teach the beginner to make his aims comprehensive, his results lasting and thorough. And we must show him that he has moral responsibilities that cannot be shirked. There are, of course, a multitude of minor points which may be left to take care of themselves. He must learn how to set papers, how to look them over, how to write characters and how not to write them, how to exact preparation, how to mark, how to punish, how to economise punishments, and he must learn the meaning of the paradox, "the aim of all punishment is to make punishment unnecessary."

There is, however, one other topic which hardly comes within the scope of this paper, but cannot be altogether passed by in writing of an educational system which is largely a system of boarding schools—the question of house management.

House work may fall to the lot of any English schoolmaster at some stage in his career, and it offers in any case unrivalled opportunities for the all-round study of boy life. No young schoolmaster should neglect any opportunity which may occur of gaining some knowledge of it. The subject is not incapable—any more than teaching—of being treated scientifically, though its scientific treatment is beset with difficulties. The management of a house is very much like the management of a large family, and success depends—even more than in teaching—upon fundamental qualities of mind and character, which cannot be acquired, though they may be developed and trained: and it is difficult to find suitable opportunities for the instruction of learners, because house management is so much a matter of individual influence, and the house-master's work consists so largely in his intercourse with individual boys. Still, much may be learned in two ways: by frank discussion with an experienced man, and from the boys themselves, with whom the probationer, from his age and his exemption from the responsibilities of regular authority, will enjoy great freedom of intercourse.

Opportunities of learning the aims of the master on the one hand, and of observing the life of the boys on the other, constitute no mean apprenticeship; and the time may perhaps come when the suggestion of a course of lectures on the art of house-mastership may be received without derision. The relation between house-master and pupil is something definite and different from anything else. The house is a community of a special character, based upon that relation, and it is perfectly possible to lay down certain broad principles by which such a relation and such a community should be controlled. Something of this kind was attempted by Arnold and by Thring, and there is no reason why the whole subject should not be thought out in the light of the long and varied experience of English schools. Where failure and success are possible alternatives, there are always lessons to be learned from the experience of others which may help to attain the one and to avoid the other; and there is no reason why any man should be allowed to assume responsibilities of the most exacting kind without availing himself of this source of the knowledge which is power. The house has been compared with the family, and it is certain that many families are ruined not merely by the vices or the weakness of the responsible heads, but by sheer ignorance of simple principles. The value of theoretical instruction lies not merely in the ideas of the knowledge conveyed, but in the fact that it stimulates and forces us to think for ourselves.

If this very slight sketch should in any degree perform the same useful office for those who are undertaking to give opportunities to probationers, it will not altogether have missed its mark. It will not do to undertake such delicate work lightly, under the impression that we have at last got to something practical, and that the way is now plain. Unless this part of the work is carefully thought out and thoroughly performed, "probationer" will be nothing but old "novice" writ large, under another name and—unpaid. Men who really teach others teach themselves more than any of their pupils learn; and, if thoroughly worked out, a sound system of probation not only ought greatly to improve the teachers of the next generation, but may even do something for those of us who have got into the habit of thinking that we have nothing left to learn.

Specialisation of Function makes the Training of Teachers a Necessity.—It ought not to be necessary to prove to this generation the need for some technical preparation of its teachers for their work. The whole trend of the time is to division of labour, and if ordinary men and women are to discharge special functions satisfactorily, one would naturally think that they must have something besides the ordinary training. The butcher, the baker, the candlestick-maker, are all inducted under supervision into the practice of their respective crafts, and they must all be the better for it, or else the practice of training them for their work would long ago have been discontinued. The work of teaching is not such work as can be undertaken by anyone "dumped" into it at any time of life without preparation.—P. A. Barnett, "Common Sense in Education" (Longmans).

HISTORICAL NOVELS AND THEIR USES IN TEACHING.

By C. S. FEARENSIDE, M.A.(Oxon).

THE term "historical novel" is ambiguous enough to require explanation, and the development and characteristics of the things denoted by the term offer many notable points of interest; but I shall trespass quite long enough on the indulgence of the editors and the public if I confine myself to the discussion of these two questions:—*What use (if any) is the historical novel to the practical teacher?* and *where can the teacher find any safe guidance in the choice or in the use of historical novels?* That phrase, "what use, if any," does not sound very hopeful, but it indicates an objection which has to be met. It is no good blinking the fact that the historical novel has bitter and powerful foes. Its very name, they say, is a contradiction in terms, for "history" is essentially "fact," while novels are essentially "fiction." The historical novel, like most other varieties of the *via media*, is assailable from both sides, the literary or artistic, and the historical or scientific. The favourite point of attack chosen by the literary critics is its "second-handedness," while the historical critic fixes rather on its "inaccuracy." Let us look a couple of specimen criticisms in the face:—

(1) *A Literary Criticism.*—To make living and real personages of past ages, hampered, as the writer must be, with the necessity of creating a remote atmosphere and a strange *milieu*, is the task of a master; and that is why, at a moment devoted to the apotheosis of the incompetent, it becomes the favourite ambition of every bungling amateur.—Mr. Heinemann in *Literature*, June 23, 1900.

(2) *A Historical Criticism.*—That most irritating product of misspent industry, the historical novel . . . . "Romola" and "The Dove in the Eagle's Nest" are not in the least faithful presentments of the ages in which their authoresses have chosen to place their very nineteenth-century characters, and it would be better to cancel reference to such works rather than fancy that any real idea of the fifteenth century in Italy or Germany can be drawn therefrom.—*Manchester Guardian*, September, 1893.

Now it is obvious that the former criticism partly explains the peculiar badness of the historical novel as expounded in the latter. But is either criticism or are both criticisms true? And if the criticisms are true, need that damn the historical novel altogether in the eyes of teachers? In each case the answer seems to me to be that it is a matter of taste and temperament. Each of the attacks comes from a certain school only—the realist in literature and the modern scientific historian respectively. And until these two schools obtain complete and acknowleged supremacy in their several fields, there seems no particular reason why we should regard their partizan utterances as the inspired judgments of Literature and History.

Seeing that it is from the latter rather than from the former standpoint that historical novels are likely to claim a place in our school work, let us look at the historical aspect a little more closely. They are often accused of "inaccuracy" in three special shapes—in *fact* (*e.g.*, in altering the sequence and details of historical events), in *language* (that is, in the dialect spoken by the characters), and in *colour* (that is, in the ideas and social relations of the personages depicted). Of course, these charges emanate rather from the antiquarian and scientific schools of history than from the picturesque school. One can more readily imagine them being made by Mr. Round or the late Prof. Seeley than by Mr. Frederic Harrison or the late Prof. Froude. And yet the last-named cried out for a new and cheap edition of Hakluyt (a cry which was raised in vain) as an antidote to Harrison Ainsworth! But if the charges are justified or justifiable, are they not equally so in the case of any kind of attempt to reconstruct the past, whether it is made by a "serious" historian or by a historical novelist? Did you ever closely examine either a manual or an advanced work of history which did not contain at least one "howler" per page? Is the man who aims at "verisimilitude" much more likely to go astray than the man who aims at "accuracy"? Is it not manifest that there is a great gulf fixed between "the bare facts" of an episode and its "true history"? Shall we dismiss as sheer nonsense Aristotle's dictum that "Poetry is superior to and more philosophic than History, for Poetry treats more of the general, History of the particular?"

Doubtless certain kinds of historians would sniff at Aristotle here, but any teacher who hankers after the use of the historical novel can count that great name on his side; so, too, as far as I can gather, may he count on the support of most persons who have approached the question from the side of education, *e.g.*, Sir Joshua Fitch, Miss Beale, Miss Hughes, and I know not how many others. Yea, even though they be specialists in history, such as Mr. Joseph Wells (in his excellent lecture on the "Teaching of History") and the admirable American "Committee of Seven."

The reasons for the general divergence between the two sets of specialists is not far to seek. In the first place, the teacher probably cannot spend more than about five per cent. of his school-time on history, whereas the research historian can devote himself exclusively to his particular department of history. Your research historian, for instance, will cheerfully give six months' continuous work to the task of proving that Harold Godwineson did or did not build a palisade at the battle which he may or may not allow you to call Senlake. The teacher, on the other hand, has just about the same number of hours, spread over a period of from six to ten years, to teach a youngster all he will ever get taught at school about the subject. And, secondly, the objects and equipments of the two men are just as different as their time and conditions of work. The original historian has his heart in his work, has a general knowledge of history, possesses a good library and knowledge how to use books, and is bent on enlarging the sum of historical knowledge in one or more respects before he dies. The teacher, on the other hand, possibly has none of these appliances, potentialities and desires, while it is his duty to give some of these to pupils who have none of them. History is one of the "subjects" which he has to teach. He has no special knowledge of it himself; he has very little time either to "get it up" or to teach it; he has only a wretched set of apparatus in the way of maps and pictures; and—as I heard a very level-headed teacher plaintively remark a few days since—"there are no text-books of English history."

Then there is the boy to be considered. How is he to be got into touch with history? As it is often set before him, history is an overwhelming mass of proper names—of persons, places, things—most of which he is expected to "remember." Now most of these persons are dead, and, as presented to him in text-books, many of them seem dull, unreal, unfamiliar, and not worth knowing. What is there attractive, say, about Flambard, Felton, or Fox—even if you do ticket them with an epithet and shed a moral over their graves? So, too, with the places and things: they are all apt to seem very far removed from the everyday surroundings of the schoolboy. What, for instance, has he to do with Parliament, Praemunire, Pularoon? Somehow or other these remote persons and things (or some of them) have to be brought into connexion with your pupils' lives: they must be made to appear real and interesting—facts, not shadows. Text-books do not do that, and, in my opinion, ought not to be expected to do that. It is emphatically the business of the oral teacher; and the teacher will find his chief opportunities in the love of the natural man for pictures and for stories. I hope to have an opportunity of saying something about pictures and poems (which may resemble either pictures or stories) at some future time: my present business is with the stories.

In the earlier stages the teacher will doubtless tell stories rather than read them or have them read. But in any case he will scarcely refuse to avail himself of the great mass of stories accessible to him in print, and some of these will come under the category of historical novels. At a later stage he will be glad if he can save some of his precious time in the school-room by being able to refer to the results of the boys' reading outside school-hours; and this reading will almost certainly include historical novels, and may include a considerable number, if there be a good store of them in the school library. One of the first things—both in time and in importance—to be done in a historical course is to awaken an interest in the past, and to quicken the dead and to bring near the remote; and for these purposes there may indeed be better ideal appliances, but there does not seem to be any apparatus which is more readily accessible, cheaper, and more effective than the varied output of the historical imagination in nineteenth-century literature. The relation between the historical novel and the text-book has been thus described by the writer of what has been called 'the greatest historical novel in the language":—

Not a day passes over the earth but men and women of no note do great deeds, speak great words and suffer noble sorrows. Of these obscure heroes, philosophers and martyrs the greater part will never be known till that hour when many that are great shall be small and the small great; but of others the world's knowledge may be said to sleep, their lives and characters lie hidden from nations in the annals that record them. The general reader cannot feel them, they are presented so curtly and coldly; they are not like breathing stories appealing to his heart, but little historic hailstones striking him but to glance off his bosom. Nor can he understand them, for epitomes are not narratives, as skeletons are not human figures. Thus records of prime truths remain a dead letter to plain folk: the writers have left so much to the imagination, and imagination is so rare a gift. Here, then, the writer of fiction may be of use to the public—as an interpreter.

Of course the interpreter may interpret wrongly. He is a translator, and no translator quite reproduces his original with absolute fidelity. If he is hopelessly wrong, we will not use him; but we will not discard him merely because he uses the terms "monks" and "friars" indiscriminately—if only he catches the spirit of his original. Above all, we will not call an interpreter a "liar" merely because he makes a different sense of any particular passage. He may have a different "text" before him; he may be a better scholar; he may be able to see things which, though they are there, are invisible to us,

And, in a clear and solemn vision,
Tell us of things which no gross ear can hear.

But the teacher can accept the aid of the historical novelist for much more "advanced" work than this. The imaginative writer can help both ourselves and our pupils to realise not only *that* the dead lived, but also *how* they lived. The text-book may give a respectable outline, but this outline is very little use in itself: it requires to be filled up. Now for political affairs this filling up may best be done by means of authentic histories (whether "sources" or "authorities"); but for giving a vivid picture of social life the historical novel is a handier and more effective instrument. The division of labour between historian and historical novelist has been well drawn for us at the very beginning of Macaulay's essay on "Hallam's Constitutional History." (One of the best of the Essays, Sir Richard Jebb recently told us, in his brilliant address on Macaulay.) Very much the same function has been assigned to the historical novel from a point of view quite different from Macaulay's, and much more acceptable to the readers of THE SCHOOL WORLD. Just after leaving the Women Teachers' College at Cambridge, Miss Hughes wrote a brief (need I say suggestive?) preface to a list of novels (historical, geographical and psychological) drawn up by her former students. These are her opening words concerning the utility of such novels to the teacher:—

Science has taught us in this nineteenth century that no living organism can be satisfactorily considered apart from its environment. Art is teaching us that no object can be satisfactorily depicted from an artistic standpoint without a background. In the more difficult field of applied science and philosophy which we label "education" we are realising increasingly (thanks, perhaps, chiefly to psychology) that what greatly matters is not only the very small circle of very clear, definite knowledge which at a given time we may possess, but also the vast mass of dim, half-conscious knowledge and feelings, abstract ideas, vague and indefinite generalisations, thousands of little details, some clear, but far more indistinct, and, behind all, the negative knowledge of what cannot be true—all this mass which makes up a dim but very powerful background making far more valuable our little bit of definite knowledge and protecting us from many errors. In other words, the object of education must be not only to gain clear and definite knowledge, but also to build up a background of dim knowledge.

Historical novels have thus received testimonials from high authorities for furnishing effective aid towards the attainment of two educational objects—to give a sense of reality and to "build up a background of dim knowledge." Besides these uses they have, I think, yet a third *principal* use: they supply a good basis for an elementary training in criticism. At a comparatively early age children begin to notice that people are not unanimous as regards either statements of fact or opinions concerning their significance and interpretation: hence there arises the curiosity which finds a vent in some form or other of the pretty problem raised by "jesting Pilate." There is, I believe, a considerable amount of diversity, in both theory and practice, as to the proper way of meeting this curiosity, especially in its earlier stages. Some people, when they smell this particular rat, "nip it in the bud," while others allow it to go on "floating in the air" and try to make some use of it. The latter class will sometimes satisfy the curiosity by pointing out the solution of the difficulty, and will sometimes put the questioners in the way of solving their own difficulties. Now in history these stimulating discrepancies are not very likely to crop up so long as a class is confined to a single text-book and to a form-master who exhumes most of his information from the same cemetery; but they will soon begin to make themselves evident if one or two historical novels dealing with the same period happen to be read about the same time. That favourite hunting ground of the historical novelist, the Great Civil War, will especially set the more inquisitive spirits grubbing and comparing—or, in other words, at the work of criticism.

On the whole, it is probable that the best field for beginners at this sort of thing is not questions of fact but questions as to the selection and interpretation of fact. To take examples, the routes of the Roman roads in Britain are very variously given; the fate of Hereward the Wake is variously stated; and there is no agreement as to whether Richard III. had his left or his right shoulder (if either) higher than the other. Now the investigation of such questions of fact seems to require specialising far beyond school possibility or desirability, and they need access to "sources" which are not usually accessible in schools. Questions of interpretation of fact, on the other hand, can often be investigated for a considerable depth without going beyond standard works; and, as in the case of the husbandman's sons, the true value of such investigation lies much more in the work of digging than in the treasure found. Such questions are particularly likely to be suggested by historical novels: Ranke, for instance, commenced historian because his notions of Louis XI.'s character were different from those which he found in Scott's "Quentin Durward."

There are many other points in favour of the historical novel as an instrument of education; but of these I have room to mention only two, and those briefly. The first is that, as things stand at present, the historical novel is practically the only means by which the English schoolboy is likely to get any idea at all of European history outside Great Britain: "The Talisman," "Rienzi," "The White Company," "Tom Burke of Ours"—the incongruous agglomeration is deliberate—cannot fail to enlarge the mental horizon, and may arouse the desire to reach the end of the beautiful rainbow of *Weltgeschichte*. And secondly, a very considerable portion of the books which all educated people are not only supposed to read but actually do read are historical novels; and of these, again, a considerable portion are read with greater interest during one's school-days than later in life.

Many historical novels are emphatically "books to read," and some of these, at any rate, can help teacher and pupil alike in the history lessons. If these things are so, why not take some pains to see that among the books within reach of the boys are included historical novels, to see that these are suitable (not necessarily from a "historical" point of view), and to encourage the boys to read them, and to read them at the right times—*i.e.*, at times when they will fit in with the work that is being done in school?

Any boy who likes a rattling good story will at any time enjoy reading, say, "Quentin Durward," "The Last of the Barons," and "The Black Arrow." So far as enjoyment is concerned, it doesn't much matter when he reads them. But it makes a deal of difference both to the boy and to the teacher if some or all of them are being read privately, for the sake of the story, at the same time that the class is labouring through the so-called "dull" fifteenth century. Which is, after all, only an example of the advantages of "Concentration."

Of course such a "Why not——?" question is fairly met by a retorting, "How can——?" History is only one subject; historical novels are but one kind of literature, and but one kind of aid in history teaching. One might easily spend a lifetime, I should say, in the critical reading of historical novels in English without exhausting the stock, though it is the output of little more than a century. Where, then, is the hard-worked teacher to turn for guidance? Publishers' lists and library catalogues seldom tell us anything definite. I wonder how many dozen times I saw "Richard Carvel, a Story of Revolutionary Times," advertised and even reviewed without coming across a single hint that "Revolutionary Times" meant "the American Revolution." Most of the attempts to give teachers the special information they were thought to need about historical novels do not strike me as being much more illuminating than publishers' catalogues. The best known of these attempts is Mr. Courthope Bowen's "Descriptive List of Historical Novels and Tales" (Stanford, 1s. 6d.). It is an excellent piece of pioneer work; but it does not give price and publisher; it abounds in such natural but misleading slips as assigning Ainsworth's "Lancashire Witches" to the "Pilgrimage of Grace" period; and as it was drawn up in 1882, it is now hopelessly out of date. The list mentioned above as having been drawn up under the direction of Miss Hughes is more complete and better arranged; but it is merely supplementary to Mr. Bowen's; it was "printed for private circulation only;" and it is now practically out of print. Both these lists aim (in my opinion, rightly) at being complete: neither (in my opinion, wrongly but prudently) makes any attempt to discriminate between good and bad.

There are, however, other lists available which are selective; and of these the most useful known to me are the following:—

(1) For Roman and Greek history: in Mr. A. L. Goodrich's "Topics of Greek and Roman History" (The Macmillan Co., 3s. 6d.).

(2) For British history [after 1066]: in "Work and Play in Girls' Schools," by Miss Beale, Miss Soulsby and Miss Dove (Longmans, 6s.).

(3) For American history: in Dr. Fiske's "History of the United States" (Clarke, 6s.).

There are, I believe, similar lists in most American text-books of the better kind, including those of Prof. Channing; and it is to be remembered that two-thirds of the time-span of "American" history is also British history. An enterprising American has, I believe, undertaken to tell the whole story of his country in a series of novels; but I have not had the opportunity of even dipping into the series.

So much for available sources of guidance in the selection of historical novels for teaching purposes. I am unacquainted with any source of guidance—other than general hints and recommendations in various pedagogical works—as to their educational uses: hence I should be particularly glad if any reader of THE SCHOOL WORLD could tell me of any attempts at a systematic treatment of the subject—especially one which did not suffer from limitations of space.

There is another point on which I should be pleased to hear from readers of this magazine—especially from those who have already shown interest in the present subject. I have reason to believe that a prominent educationist contemplates a teachers' hand-book to historical novels, and would welcome expressions of interest in the project and practical suggestions of any sort. Any communications on this topic will be duly forwarded to the projector.

THE LAW RELATING TO THE TEACHER'S TENURE OF OFFICE.

By T. A. Organ.
Barrister-at-Law, of the Inner Temple and Oxford Circuit, Author of "School Law," &c.

II.

THE Schools Enquiry Commission of 1864 distinguished three grades of secondary schools according to the age up to which pupils normally remained at school. For the first grade, the age was 18 or 19; for the second grade, 16 or 17; for the third grade, 14 or 15. The Commissioners vary their general practice, as above stated, in the case of "third-grade" secondary schools. In schemes for these schools, the power of appointment and dismissal of all grades of teachers is usually vested in the governing body. It will be noted that in these schools the headmaster is not entrusted with the power of appointing and dismissing his assistants. We are tempted to discuss the anomalous attitude of the Commissioners in this matter, but it would be travelling outside the purpose of this article to do more than deal with existing facts.

A still more striking anomaly becomes apparent in the practice of the Commissioners when dealing with public elementary schools. These schools do not fall within the purview of the Endowed Schools Act, but the Charity Commissioners have a general administrative and legal jurisdiction over certain of them which are under voluntary managers. This general jurisdiction (as distinguished from the special jurisdiction set up by the Endowed Schools Acts) is exercised under the powers conferred by the Charitable Trusts Acts.

In the case of elementary schools, the Commissioners generally provide for a limited form of appeal. The power of appointment and dismissal of teachers is given to the managing committee, but provision is made whereby under certain conditions an appeal may be made from a decision of a majority of the managers on any matter of difference, especially any decision respecting the dismissal of a teacher. The following are typical of the provisions usually inserted in schemes for elementary schools:—

(*a*) Appointment of Teachers.—The appointment and dismissal of the schoolmaster and schoolmistress and their assistants, except when under the provisions hereinafter contained the dismissal of any master, mistress, or assistant is awarded by the arbitrator, shall be vested in and exercised by the committee of managers.

(*b*) Differences to be Settled by Arbitration.—"In case any difference arises in the committee upon any matter or question relating to the schools, the minority thereof (being not fewer in number than one-third of the whole of the committee) may make request in writing to the Lord President of the Council for the time being to name an arbitrator by whom the matter of such difference may be determined, and thereupon the said Lord President may nominate one of Her Majesty's Inspectors of Schools to be such arbitrator, and the arbitrator so nominated shall inquire concerning the matter in difference, and the award in writing of the said arbitrator under his hand, when laid before the committee, shall be final and conclusive in the matter, and shall be forthwith carried by them into effect."

(*c*) Dismissal of Teachers.—"If the said arbitrator upon any such reference as aforesaid directs or awards that any master, mistress, or teacher in the schools shall be dismissed, such direction or award, when a copy thereof has been served upon such master, mistress, or teacher personally, or has been left for him or her at his or her place of abode, or at the schools, shall operate as a direct dismissal of the same master, mistress, or teacher, who shall thenceforth have no interest in his or her office, or in the said schools or premises, or the funds or endowments thereof under this scheme, and shall be disqualified from holding thenceforth any such interest."

There are yet many schools—both secondary and elementary—which are not governed by the provisions of a formulated scheme, but by provisions contained in their respective trust-deeds. As may be expected, in many cases these deeds are loosely drafted, and consequently have been prolific sources of litigation, and especially so with reference to the teacher's office. Nearly always the deed or other instrument of foundation contains a reference to the teacher's qualifications and the mode of his appointment and dismissal. The appointment of the teacher may be for life, if the terms of the instrument of foundation do not otherwise provide. The teacher is then said to have an estate of freehold in his office. On the other hand, the teacher may be appointed to hold office during the pleasure of the governing body, or the powers of the governing body as to the removal of a teacher may be of a restricted character.

The most important of the cases which have given rise to judicial decisions are those in which the courts have been asked to interpret "at" or "during the pleasure." Very great consideration was given to this in a case in which the headmaster of Rugby School had filed a bill praying for a declaration of the court that a resolution of the governors of the school, dismissing him from his office, was invalid and ought not to be enforced; and for an injunction to restrain the governing body from dismissing him from the said office. The case was argued at great length before Vice-Chancellor Malins. It was held that the bill did not show cause for the interference of the court. In giving the decision, the Vice-Chancellor said:—"They (the headmasters) hold their offices merely at the pleasure of the governing body, and are, consequently, liable to be dismissed without notice, and without any reason being assigned. The probable object of the Legislature in making such a provision was to avoid such contests as have frequently taken place in this court and the Court of Queen's Bench as to the power of the trustees to remove their masters from public schools. Assuming this to be the true construction of the Act, it was then contended, on behalf of the plantiff, that this court will control the proceedings of all such bodies as this, when it is satisfied that their powers have been exercised corruptly, unjustly, or for the purpose of effecting some collateral object, and that the circumstances of this case show that the power of the governing body has been so improperly and unjustly exercised, and its exercise was so improperly brought about, that it is the bounden duty of this court to interfere and treat the resolution for dismissal of the plaintiff as invalid, and restrain the governing body from carrying it into effect. I think that the clear result of the numerous authorities cited on both sides of the argument of the case is that all arbitrary powers, such as the power of dismissal at pleasure which is given to this governing body, may be exercised without assigning any reason, provided they are fairly and honestly exercised, which they must always be presumed to have been until the contrary is shown, and the burthen of showing the contrary is upon those who object to the manner in which the power has been exercised. No reasons need be given; but if they are given, this court will look into their sufficiency."

"According to their sound discretion" are also words which have given rise to legal controversy. The scheme of an endowed school provided that the governors should have full power and authority to elect, nominate and appoint a master, and to remove him from the school according to their (the governors') sound discretion, and of placing or appointing another master. The governors were empowered to make bye-laws, and they made a bye-law prescribing that no master should thereafter be displaced unless some sufficient cause of complaint should be made in writing against him, and the same cause of complaint be first allowed of and declared by them to be a sufficient cause. It was held that the governors might, in their discretion, remove a master without summoning him to answer the charges made against him, and without giving him an opportunity to answer those charges. It was further held that the governors had no right to limit the discretion given by the Charter, and that the bye-law was void. The court formed the opinion that the governors had exercised their discretion in a *bona-fide* manner, and on this ground refused to intervene.

There has been much discussion as to the right of a teacher to a hearing before the governors arrive at a decision to dismiss him, such decision being based on a charge of misconduct or on the ground of incompetency. In the case of the master of a trust school, which was also a public elementary school, the deed of trust establishing the school provided that the master of the school should be appointed by the vicars of three parishes, or the greater number of them, and that the said vicars might remove the master for certain specified causes. One of the vicars alleged that the master had misconducted himself in the management of the school. Two of them issued a notice which purported to dismiss the master. The question of the schoolmaster's dismissal was not considered at a meeting of the three vicars, nor had the schoolmaster any opportunity of being heard in his defence. It was held that the schoolmaster could not be dismissed except by a resolution passed at a meeting of the vicars, and that at such meeting he should have an opportunity of being heard in reply to any charges made against him. An injunction restraining the two vicars from dismissing him until a meeting had been held, and until he had had an opportunity of answering the charges, was granted. In this case, North, J., said:—"There is nothing to show that any notice was given to the plantiff that he was to be dismissed without the tribunal which could decide upon his conduct being summoned, and without his having an opportunity of appearing before it. That being so, it appears to me that an elementary principle of justice has been neglected; the person accused has not been told what the charges against him are, and has not had any opportunity of answering them."

Having regard to the many instances in which the terms of trust deeds are being disregarded, especially in the appointment of trustees, the decision in a recent case is instructive. The trust deed of a school stated that the trustees were to have the power of appointing and dismissing the schoolmistress. None of the original trustees was in office, and the existing trustee had not been elected in accordance with the terms of the deed. Under that state of things the school was *de facto* managed by one *ex-officio* trustee and by certain irregularly appointed managers. The schoolmistress was appointed by the managers on the terms of a three months' notice to quit. She remained in office for about thirteen years until the time came when the managers wanted her to go, for good reason or bad reason is immaterial. For the schoolmistress it was argued that her dismissal was illegal, because effected by persons who were not qualified as trustees. It was held that the notice was valid, the plaintiff having contracted with the managers of the school for the time being and having been dismissed by those managers.

As to teachers in the service of school boards, the Education Act, 1870, provides that a school board may appoint the teachers required for any school provided by such board to hold office during the pleasure of the board, and may assign them such salaries or remuneration (if any) as they think fit, and may from time to time remove any of such teachers; but no such appointment shall be made, except at the first meeting of such board, unless notice in writing has been sent to every member of the board.

"During the pleasure of the board" is again the important phrase. Generally, as to the force of this phrase, the present writer submits that it does not make it *ultra vires* a school board or a governing body to make a contract with a teacher one of the provisions of his contract being an agreement to give notice of any intention to terminate the contract. The phrase certainly prevents the teacher from obtaining a freehold estate in his office, but it is submitted that it does not restrain school boards from making with their teachers such agreements as are usual in the profession. This opinion is not without corroboration, although the point has not been judicially decided, so far as the present writer is aware. But in a case which came before courts about four years since, a teacher employed by a school board obtained damages in lieu of notice, as provided by his agreement with the school board. And in the case of the dismissal of certain assistant-masters by the headmaster of Grantham Schools, the Charity Commissioners expressed the opinion that assistants, who had been dismissed without notice, were entitled to a term's salary in lieu of notice, although they held their appointments under the provisions of a scheme which gave to the headmaster sole power in the matter of appointing and dismissing his assistants.

The creation of the Board of Education as a powerful central authority in affairs educational makes it interesting to note that teachers of a certain class cannot be removed from office by the appointing local body without the consent of the central authority. These are the teachers in the Poor-law Schools who are appointed by boards of guardians, and who cannot be dismissed without the consent of the Local Government Board; and certain of these teachers are in a more favourable position still. The following conditions obtain in respect of these teachers:—

(1) *Teachers Appointed on or before February 28th, 1879.*—The power of appointing these teachers was vested in the guardians of the poor for the district; but these guardians have not the power of dismissing any such teacher. Teachers appointed on or before the date named continue in office until death, unless resignation, insanity or removal by the Local Goverment Board previously occur. The power of the guardians in this matter is limited to the suspension of any teacher from the discharge of duties, but such suspension must be forthwith reported to the Local Government Board, together with the cause thereof; and if the Local Government Board remove the suspension of such teacher by the guardians, that teacher shall forthwith resume the performance of duties.

(2) *Teachers Appointed after February 28th, 1879.*—The power of appointment of these teachers is vested in the guardians of the poor for the district. So also is the power of dismissal, subject to the consent of the Local Government Board. The regulation at present in force is in the following terms:—"Every teacher appointed after February 28th, 1879, shall continue to hold office until he or she die, or resign, or be dismissed by the guardians, subject to the consent of the Local Government Board, or by the Local Government Board, or be proved to be insane by evidence which that Board shall deem sufficient. Provided that the guardians may, with the like consent, determine the appointment of any such teacher at any time before, or at the expiration of the first year of his or her service, by giving to the teacher three months' previous notice in writing, signed by their clerk, of such their intention."

OBSERVATIONAL ASTRONOMY.

A Series of Notes upon the Positions and Apparent Motions of Celestial Bodies.

By R. A. Gregory, F.R.A.S.

Professor of Astronomy, Queen's College, London.

IV.

Annual Variations of the Sun's Position with Reference to the Horizon.

Length of Noonday Shadows.—Observe the length of the shadow of a fixed object at noon at different times of the year. If possible, mark the length of the shadow of a post at noon on March 21st, June 20th, September 23rd, and December 21st—that is, at the equinoxes and solstices.

Measurement of Sun's Noonday Altitude.—Fix a thin rod upright in a drawing-board or slab of wood. Draw a line upon the wood passing through the point in which the rod is fixed. Place the board out of doors so that it is horizontal and this line lies due north and south (Fig. 1). When the shadow of the rod falls upon the line, that is, at noon, mark upon the board the point where the end of the shadow touches the line. Stand a piece of cardboard upright upon the north and south line and mark upon it three points, (1) at the bottom of the rod, (2) at the top of the rod, (3) at the point reached by the end of the shadow. Connect these points and measure the angle ABC with a protractor. This angle shows the altitude of the sun at noon on the day of the observation.

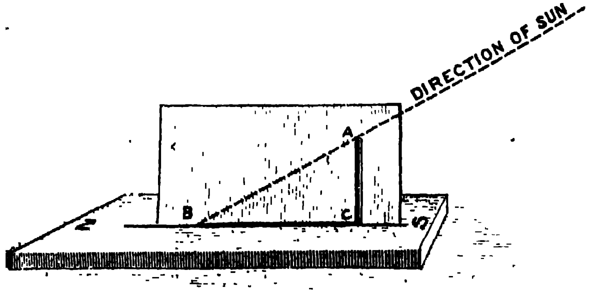
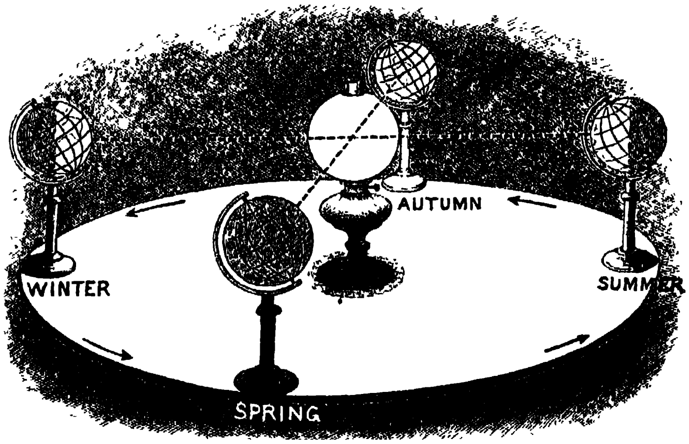


Fig. 1.—A method of determining the Altitude of the Sun at Noon.

Conditions for a Constant Noonday Altitude.—Place a lighted lamp upon a table, and near it a small globe, or a tennis ball with a knitting-needle through the centre, forming an axis. Arrange the globe or the ball with the axis perpendicular to the table, and the equator on a level with the light of the lamp. Carry the globe around the lamp on this level, and notice (1) that the light, which represents the sun, is directly overhead at the equator in any position of the globe; (2) that the direction, with reference to the zenith or horizon, of a line from the light to any place at noon—that is, when the place directly faces the light—depends upon the latitude, and is constant for any one latitude; (3) that during a complete spin of the globe every place faces the light for half the period of spin, and is out of the light for the other half. The model thus illustrates that, if the earth revolved round the sun with its axis perpendicular to the plane of its orbit, the sun would always have the same altitude at noon at any one place, and this altitude would depend upon the latitude of the place. Also, that day and night would be of equal length everywhere throughout the year.



-To explain how the annual Change of Altitude of the Sun caused by the constant Inclination of the Earth's Axis.

Explanation of Inclination of Equator to Ecliptic.—Arrange the axis of the globe or ball about 23½° out of the vertical, or 66½° to the level of the table. Let the top of the axis point upward to some mark or object on the ceiling of the room. Place the globe in the four positions represented in Fig. 2, the axis being kept pointed in a constant direction. Notice that (1) at the summer solstice the light is directly overhead in latitude 23½° north of the equator (Tropic of Cancer); (2) at the winter solstice it is 23½° south of the equator (Tropic of Capricorn); (3) at the spring and autumnal equinoxes it is directly over the equator. Carry the globe completely round the lamp to represent the earth's annual revolution round the sun. Notice that on account of the inclination of the axis the sun's apparent position varies gradually from 23½° north to 23½° south. At places between these two limits the sun is directly overhead at noon twice in the course of a year.

Explanation of Variation of Sun's Noonday Altitude.—Stick a long pin into the globe in the position of London, so that it points upwards to the zenith. Place the globe successively in the four positions of equinoxes and solstices as before, and in each case spin the globe so as to make the pin face the light, to represent the position at noon. Notice that (1) at the summer solstice the direction in which the light is seen at noon is not far from the zenith (this represents the high sun of summer); (2) at the winter solstice the light is much nearer the horizon, or further from the zenith of London, than in summer; (3) at the equinoxes the light at noon is seen in a direction midway between the extreme points of summer and winter (Fig. 3). The annual variations of the sun's noonday altitude at any place can be similarly explained by the inclination of the earth's equator or axis to the plane of revolution around the sun.

Duration of Daylight in Different Latitudes.—For every latitude north or south of the equator the lengths of the days and nights vary continually throughout the year. The table given below shows the number of hours of daylight at the beginning of the various months of the year, at the equator, in the latitude of part of England, and about the latitude of North Cape. It will be noticed that at the equator there is 12 hours 7 min. of sunlight all through the year. In England the day is only 7 hours 44 min. long in midwinter, and lengthens from that to 16 hours 44 min. in midsummer. At the North Cape no sunlight is received for more than two months in winter, and no darkness is experienced for about the same period in summer. These differences are caused by the different manner in which the earth is presented to the sun during its annual revolution with the axis constantly inclined 23½° out of the vertical to the ecliptic.

Duration of Sunlight in Different Latitudes.

Date.	Equator.		Lat. 52° N.		Lat. 70° N.	
	h.	*m.*	*h.*	*m.*	*h.*	*m.*
January 1st	12	7	7	50	0	0
February 1st. .	12	7	9	8	4	58
March 1st	12	7	10	55	9	33
Spring Equinox . . .	12	7	12	11	12	19
April 1st	12	7	13	9	14	4
May 1st... .	12	7	14	56	18	55
June 1st .	12	7	16	23	No night.	
Midsummer Day ..	12	7	16	44	No night.	
July 1st	12	7	16	37	No night.	
August 1st ...	12	7	15	29	21	17
September 1st .	12	7	13	34	15	30
Autumnal Equinox .	12	7	12	11	12	19
October 1st . .	12	7	11	13	11	6
November 1st	12	7	9	35	6	25
December 1st .	12	7	8	5	0	0
Midwinter Day	12	7	7	44	0	0

The Midnight Sun.—It has been explained that a star at a distance of 51½° from the North Celestial Pole is a circumpolar star at London, that is, its complete diurnal circle is above the

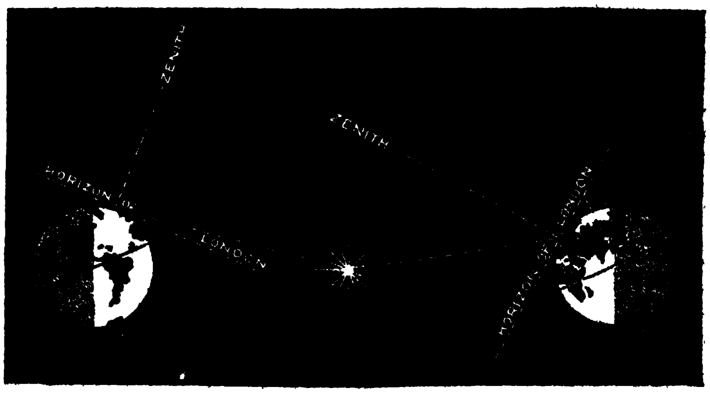


Fig. 3.—To explain why the mid-day Sun, seen from London, is low down in the sky in midwinter and high up in midsummer.

horizon at London. Applying the same principle to the sun, it is evident that, if at any time of the year the sun had a declination of 38½° N., in which case it would be 51½° from the North Celestial Pole, the complete diurnal circle would be described above the horizon of an observer in the latitude of London, and the sun would therefore be seen for the whole twenty-four hours. As the sun does not get so far north of the equator as 38½° N., it is not circumpolar in London at any time of the year. But it does sometimes become circumpolar in latitudes a few degrees further north. As an observer proceeds north from London, the Pole Star gets higher and higher above the horizon, and therefore the circumpolar zone of the celestial sphere becomes larger and larger. In latitude 60° the Pole is 60° above the horizon, and all stars within 60° of the Pole, or 30° from the equator, describe their complete diurnal paths above the horizon. In latitude 66½° N., the Pole is 66½° above the horizon, and therefore all bodies 66½° from the Pole, or 23½° north of the equator, are circumpolar. But the sun is 23½° N. of the equator on midsummer-day; hence its complete diurnal path is above the horizon in latitude 66½° N. and higher latitudes on that day. At midday it is seen 66½° away from the Pole towards the south, and at midnight it is 66½° away from the Pole towards the north—that is it, on the horizon. This is the phenomenon of the midnight sun.

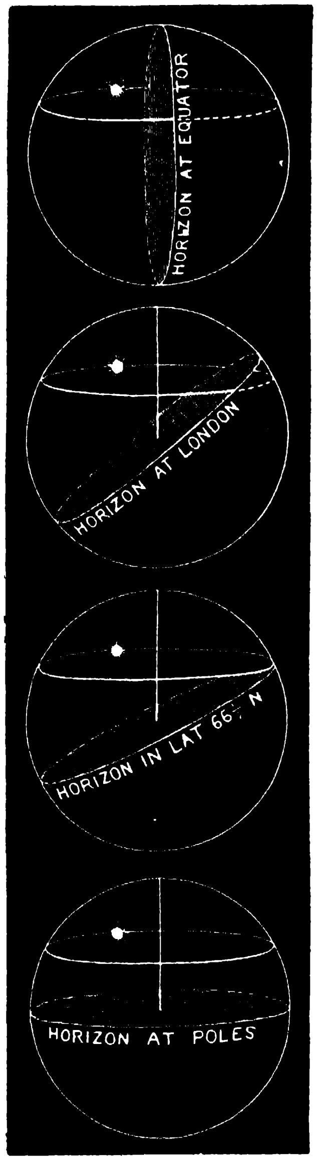


Fig. 4.—The apparent path of the Sun at the Summer Solstice, as seen from the equator, London, lat. 66½° N., and the North Pole.

It is not necessary to describe in any detail the apparent paths of the sun in different latitudes at different times of the year. If the declination of the sun is given, and the latitude of the observer, the apparent path can be found by reasoning from the principles already described for stars, or by constructing a diagram similar to that represented in Fig. 4. One or two examples may, however, be helpful.

The sun's declination on April 15th is about 10° N. In what latitudes is the sun seen during the whole twenty-four hours?

Declination 10° N. = 80° from North Celestial Pole.
The horizon must therefore be 80° from the Pole.
But altitude of Pole = latitude.
Therefore sun is circumpolar in lat. 80° N. or higher.

An Arctic explorer saw the sun on the horizon at midnight on May 15th. The sun's declination at noon on that day was 19° N. In what latitude was the observer situated?

Declination 19° N. = 71° from North Celestial Pole.
For sun to be circumpolar the horizon must therefore be 71° from Pole.
But altitude of Pole = latitude.
Therefore latitude of observer = 71° N.

Annual Variations of the Lengths of Day and Night.—Place the globe in the position for the spring equinox, and spin it in this position, to represent the diurnal rotation of the earth. Notice that every part of the earth is turned towards the light for half of a complete rotation, and away from it during the other half.

Place the globe in the position for midsummer day, when the sun is 23½° north of equator, and spin it. Notice that (1) every place in the northern hemisphere is longer in illumination than in darkness; (2) the north polar regions are not turned away from the light at all during the rotation of the globe; (3) the south polar regions are in darkness throughout the rotation.

Place the globe in the position for midwinter day, when the sun is 23½° south of the equator, and notice that (1) places in the northern hemisphere are in darkness longer than in illumination during a spin of the globe; (2) the north polar regions are in darkness throughout a rotation; (3) the south polar regions are in illumination during the complete rotation.

Explanation of the Cause of the Seasons.—Place the globe in the position for midsummer in the northern hemisphere, and stick a pin in the position of London. Notice that (1) the light from the lamp, representing the sun, strikes the surface of London nearly vertically; (2) during a rotation the surface is exposed to the rays for a longer period than turned away from it. Place the globe in the position for midwinter day, and notice that the conditions are reversed, the rays now striking the surface at London obliquely, and only shining upon it for a small part of a rotation. Notice also that the midsummer position for the northern hemisphere is the midwinter position for the southern hemisphere, and *vice versâ*. The seasonal changes of temperature are due to the annual variations in the lengths of days and nights (caused by the inclination of the earth's axis) and the different inclinations with which the sun's rays traverse the atmosphere at different times of the year. The following experiments illustrate seasonal effects:—

Amount of Heat received in Different Periods of Time.—Take two similar thermometers with lamp-black on the surface of the bulbs, and place them side by side opposite a bright lamp. Notice that they show the same temperature when both are screened from the lamp. Expose one for *one* minute and the other for *two* minutes to the rays from the lamp, and notice that the mercury in one rises higher than in the other. Repeat the experiment, but change the two thermometers to which the long and short exposures are given to show that the difference in the rise of the mercury has nothing to do with the thermometers, and is due to the fact that one is exposed to the heat source for a longer time than the other. In a similar way, the amount of heat received at a place depends upon the length of time during which the sun's rays are shining upon the place.

Different Action of Oblique and Vertical Rays.—Take two pieces of sensitive albuminised paper, say one inch square; place them side by side, one with its sensitive surface vertical and the other inclined at an angle to the vertical. Burn two inches of magnesium ribbon, at a distance of a foot from the squares of paper, in such a position that the light falls normally on the vertical piece of paper. This square will be more blackened than the other, showing that light acts more energetically when a surface is at right angles to the direction of the rays. In the same way, when the rays from the sun strike a surface obliquely, they are less powerful than when they strike it vertically or nearly so.

Points at which the Sun Rises and Sets.—The points on the horizon at which a star rises and sets are determined by (1) the star's position with reference to the equator, that is, its declination; (2) the latitude of the place of observation. In precisely the same way the positions of the sun at sunrise and sunset depend upon the sun's declination and the latitude of the place of observation. Consider the three most distinctive positions of the sun on the celestial sphere. viz.:—the declensions at the equinoxes and solstices.

These declinations are the same in whatever position an observer of the sun may be situated. Now each of these points on the celestial sphere corresponds to a particular diurnal circle, as is represented in Fig. 5, and each of the three diurnal circles cut the horizon in particular points. In the latitude of London the points at which the circles cut the horizon are as follows:—

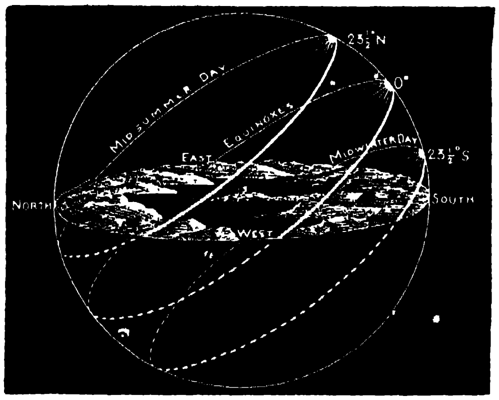


Fig. 5.—Apparent paths of the Sun at London at the Equinoxes and Solstices.

Time of Year.	Sun's Declination.	Rising Points.	Setting Points.
Midsummer-day	23½° N.	40° N. of E.	40° N. of W.
Equinoxes ...	0	E.	W.
Midwinter-day	23½° S.	40° S. of E.	40° S. of W.

It is thus seen that the sun only rises due east and sets due west when it is on the celestial equator. It rises nearly north-east in London on midsummer-day, and sets nearly north-west. On midwinter-day it rises nearly south-east and sets nearly south-west. In the course of the year the positions of the sun at sunrise vary between the limits shown, namely, from 40° N. of E. to 40° S. of E.; and its positions of setting vary in the same way from 40° N. of W. to 40° S. of W.

Exercises.

(1) Give a diagram explaining the difference in the sun's altitude at noon in England on the longest and shortest days of the year.

(2) Can the sun ever be directly overhead in any part of England? Give reasons for your answer.

(3) In what latitude is the sun in the zenith at noon (*a*) on midsummer day, (*b*) at the equinoxes, (*c*) on midwinter day?

(4) The Tropics of Cancer and Capricorn are circles 23½° north and south of the equator. Why should they be situated in these latitudes more than in any other?

(5) What difference could you observe
  (*a*) Between the position of the sun when it is rising in December and when it is rising in June?
  (*b*) Between its position at noon in December and its position at noon in June?

(6) Explain why, in the zone on the earth between lat. 23½° N. and lat. 23½° S., the sun appears vertical in the sky twice in a year?

(7) What are the principal motions of the earth? Explain how it is that varying seasons and days and nights of unequal duration are caused by the plane of the equator being inclined to the plane of the ecliptic.

(8) How could a globe be used to explain the varying length of day and night according to the season of the year, and the different times of day at places in the same latitude?

(9) Explain, with diagrams, why the days are (*a*) longer, (*b*) warmer, in summer than in winter.

(10) Explain and illustrate by a diagram (*a*) the succession of the four seasons, (*b*) the variation in the length of day and night during the year.

(11) The sun's declination of August 1st is 17° 50′ N. To what latitude would a traveller have to go in order to see the "midnight sun" on that date?

TYPICAL SCHOOL TIME-TABLES.

"Tell me how you make your pupils spend their time, and I will, with due diffidence, venture an opinion on the ideal of life which you have formed for them." So wrote Mr. Barnett in our March number. Even if the ordinary class-master is not able to do this, it is quite certain that he can learn far more from the study of actual time-tables than from any amount of reading about them. We have consequently decided, as opportunity arises, to publish the time-tables of certain typical schools. We begin with that of Rugby School: for permission to do this our thanks are due to the Head-master of Rugby, and also to Messrs. George Bell and Sons, the latter having allowed us to make use of the time-table as it appears in Mr. Bradby's "Rugby":—

RUGBY SCHOOL.—TIME TABLE.—OCTOBER, 1899.

CLASSICAL SIDE.	MONDAY.					TUESDAY.			WEDNESDAY.					THURSDAY.			FRIDAY.					SATURDAY.		
	1st Less.	2nd Less.	3rd Less.	4th Less.	5th Less.	1st Less.	2nd Less.	3rd Less.	1st Less.	2nd Less.	3rd Less.	4th Less.	5th Less.	1st Less.	2nd Less.	3rd Less.	1st Less.	2nd Less.	3rd Less.	4th Less.	5th Less.	1st Less.	2nd Less.	3rd Less.
SIXTH AND UPPER SCHOOL	D	C	M	FN	M	C	C	C	C	C	M	GN	C	C	FN	C	C	C	C	M	C	C	GN	C
UPPER MIDDLE	D	F	C	M	C	C	N	M	C	C	F	M	C	H	M	C	C	C	N	C	C	C	C	C
LOWER MIDDLE AND SHELL	D	C	C	C	C	C	M	N	C	M	C	C	C	C	C	F	H	F	M	C	C	C	M	C
SPECIALISTS	D	C	M	FN	M	Sp	C	C	Sp	Sp	M	GN	C	Sp	FN	Sp	Sp	C	Sp	M	Sp	C	GN	Sp
MODERN SIDE.																								
SIXTH AND UPPER SCHOOL	D	M	G	N	L	L	E and L	F	E[1]	G	F	N	F	L	N	M	E	M	H[2]	F	G	M	N	G
UPPER MIDDLE I. ...	D	M	Gg	L	F	L	N	L	F	L	N	E	E	H	F	M	L	M	N	F	F	M	G	F
UPPER MIDDLE II. LOWER MIDDLE I.	D	M	Lab	L	F	L	Gg	N	F	L	Lab and N	F	E	H	F	M	L	M	H	F	F	M	E	L
LOWER MIDDLE II. AND SHELL	D	M	F	L	F	L	Gg	N	E	F	N	L	E	H	F	M	L	M	F	Gg	F	M	L	H

[1] Lower Fifth do History.

[2] Lower Fifth do Geography.

ARMY CLASS.	MONDAY.						TUESDAY.				WEDNESDAY.						THURSDAY.				FRIDAY.						SATURDAY.			
	1st Less.	2nd Less.	Mid. Less.	3rd Less.	4th Less.	5th Less.	1st Less.	2nd Less.	Mid. Less.	3rd Less.	1st Less.	2nd Less.	Mid. Less.	3rd Less.	4th Less.	5th Less.	1st Less.	2nd Less.	Mid. Less.	3rd Less.	1st Less.	2nd Less.	Mid. Less.	3rd Less.	4th Less.	5th Less.	1st Less.	2nd Less.	Mid. Less.	3rd Less.
UPPER DIVISION ...	D	GCh	L*	GD	Gg	E	M	HM	HM	GD	M	GCh	F	L	M	M	F	M	F*	L	HM	GCh	L	E	Dr	HM	GCh*	M	HM*	F
LOWER DIVISION ...	D	GCh	GD	Gg	M	M	F	F	M	Dr	F	GCh	M	M	L	E	M	L	GD	M	F	GCh	M	M	L	M	GCh	L	L	M

* Higher Mathematics in Special Cases.

1st Lesson* from 7.15 to 8.15.
2nd Lesson* from 9.15 to 10.15,
or from 10.15 to 11.15.
3rd Lesson* from 11.15 to 12.15,
or from 12.15 to 1.15.
4th Lesson* from 3.0 to 4.0.
or from 4.0 to 5.0.
5th Lesson from 5.0 to 6.0.

In the Army Class 2nd Lesson* is from 10.0 to 10.45, and Middle Lesson from 10.45 to 12.15.

*These are prepared Lessons.
In the lower parts of the School, preparation is generally done under the guidance of the Master.

C stands for Classical.
D ,, Divinity.
E ,, English.
F ,, French.
FN ,, Some do French, others Natural Science.
G ,, German.
Gg ,, Geography.
GN ,, Some do German, others Natural Science.
H ,, History.
Lab. ,, Laboratory.
L ,, Latin.

(On the Classical side and for Specialists 2 hours English are included, at varying times.)

M stands for Mathematics.
N ,, Natural Science.
Sp ,, Special Work in Mathematics or Natural Science.

Dr stands for Freehand Drawing.
GCh ,, Some do German, others Chemistry.
GD ,, Geometrical Drawing.
HM ,, Some do History (Sandhurst), others Mathematics (Woolwich).

H. A. JAMES.

PRACTICAL WORK IN PHYSICAL GEOGRAPHY.

A SERIES OF NOTES ON EXPERIMENTS AND OBSERVATIONS FOR THE NEW SCHEDULE OF THE CAMBRIDGE JUNIOR LOCAL EXAMINATION.

By DR. A. J. HERBERTSON, F.R.G.S.

IV.—Observations on the Atmosphere.

SYSTEMATIC observations of weather can be made in all schools, town as well as country. The discipline of noting the atmospheric conditions from day to day, of comparing the sequences of changes, of daily recording the results of observation, of regularly tabulating them and drawing conclusions from them, is complex and invaluable. It may be begun at a very early age without any instruments, and continued throughout the school course. The practical advantages of such a course to country or seaside people can hardly be over-estimated. To be profitable, observations must be regularly made at a fixed hour, and must be accurately recorded. The best hour for taking observations is 9 a.m.

Without Instruments.

(1) Begin with observations on cloud and sunshine (or starshine). Note the proportion of sky covered with cloud, first of all in quarters, and later in tenths of the sky. Note the direction from which the clouds come, when this is possible, using some well-marked points on the horizon as guides to the cardinal points. Note if rain is falling, and also if it has fallen during the last twenty-four hours.

(2) When a sufficient number of these observations have been made, the results should be tabulated to see if there is any relationship between (*a*) rain, (*b*) cloudiness, (*c*) direction of clouds. This may be done by tabulating the amount and direction of cloud on each day it was raining or at the observation before rain fell.

(3) The colours of the sky at sunrise and sunset should be observed, and the nature of the weather that follows. The gathering of clouds on any prominent hill should be looked for. The appearance of rainbows, halos, coronæ, &c., should also be noted. Many weather saws are based on such observations. The local ones should be collected and tested.

(4) Bodily sensations should be noted—hot, cold, close, damp, dry, crisp. It is important to note the changes of the states of feeling, and to compare them with changes in the clearness with which distant objects can be seen, the amount of cloud, the direction of the wind, &c.

The simplest and most easily observed changes are those due to a cloud obscuring the sun. A summer thunderstorm gives a series of rapid changes of weather and of sensations, both of which should be closely observed.

(5) The direction of the surface wind should be observed from the movements of smoke, trees, weather-cocks, flags, or a handkerchief held out at arm's length. Ultimately the direction should be told by facing the wind and turning until the sensation on both cheeks due to its action are the same.

(6) The pressure of the wind may be roughly tested by noting how far from the vertical a handkerchief held with the arm normal to the wind's direction is raised. The movements of leaves and branches, and the difficulty of running or walking against the wind, may also be used as rough measures of pressure.

(7) Every morning traces of dew or hoar-frost should be looked for and distinguished from those of rain or snow which may have fallen during the night. The pupils should be asked what was the state of the sky and the direction of the wind on the previous evening.

Experiments may be made by putting out various objects—*e.g.*, a piece of wood, metal, or stone—on a clear night and noticing where the dew or hoar-frost is deposited. The effect of trees in shading the ground from dew or rain should be noted.

(8) The clouds may now receive closer attention. Fog (dry) should be distinguished from mist (wetting); stratus, cumulus and cirrus clouds differentiated, and the different directions and speeds of clouds at different heights. With older children the sequence of cloud and surface wind movements may be traced, the direction of the upper clouds being noted in one column, and in another that of the lower clouds and surface winds at the time of observation and at periods of twenty-four, or better twelve, hours afterwards. A special series of observations might be made at the end of a spell of fine weather.

(9) The varieties of cloud may be still further differentiated. See Mr. A. T. Simmons's article in THE SCHOOL WORLD for August, 1899.

(10) The sequence of cloud, wind, rain and personal sensations (hot, cold, muggy, fresh) should be observed in a few typical storms.

(11) The dates of the beginning and ending of agricultural operations, of the appearance of wheat or oat leaves and flowers, of the leafing, flowering and fruiting of selected plants, should be noted, as they give an indication of early, average or late seasons. The weather of the previous months should be looked over. In towns the date of the appearance of native vegetables and fruits in shop windows should be noted. The appearance and disappearance of certain birds, their eggs and their young ones, should be observed. There is no need to destroy plant, animal or egg to do these things. The taking of life in any form for purposes of dissection by children should be strongly discouraged.

(12) Special observations should be made during snow storms. Compare the wind and lee sides of exposed objects, and also the surface form of the fallen snow to windward, to leeward. The shape

of the ripple-like markings and a great drift may be observed and compared with those of sand.

With Instruments.

(13) The rain-gauge is the simplest instrument to make and use. At first a simple cylindrical vessel may be used in which the depth of rain can be measured. As this is usually small, it is well to pour the water into a narrow glass cylinder, say a fifth the diameter of the other, so that the depth of water per unit area is magnified twenty-five times. This may be done directly by using a filler 5 inches diameter which leads the water into a glass cylinder 1 inch diameter. A depth of 1 inch in the cylinder corresponds to a rainfall of $\frac{1}{25}$ inch.

(14) Depth of snow should be measured with a foot rule. That gathered in the large cylindrical vessel should be melted, a lid being put on to prevent escape of vapour and then treated as rain. Or, the cylinder may be turned upside down and pressed into the snow, and the section of snow thus obtained in the vessel melted.

(15) The principle of the thermometer, which utilises the different expansibilities of glass and mercury with temperature changes, should be explained. The need for guarding against radiations of all kinds, and the need for observing shade temperatures under uniform conditions, should be insisted on and illustrated by reading the thermometer under different conditions, in sun and shade, near or far from fire. The effect of altitude on temperature may also be observed by reading a sling thermometer at the bottom, top, and again at the bottom of a hill, the last observation being necessary, as the temperature changes with the time of day.

(16) A thermometer fixed in a proper screen should be read at least once a day. (The older children should read maximum and minimum thermometers as well.) The mean should be taken every five days and every month.

(17) Every school should have a self recording barometer whose principle should be explained. The curve traced should be carefully examined, and an observation made and recorded at the time the thermometer is read. The observations are to be tabulated and averaged like the temperature ones.

(18) Instrumental records of one class should be compared with the non-instrumental ones of a lower class and applied to the explanation of current weather.

(19) Occasionally more frequent observations of both barometer and thermometer should be made. During a thunderstorm, say, every quarter of an hour; during a short, sharp storm, every one or two hours. The instrumental records should be compared with the non-instrumental ones made at an earlier stage.

Mr. Dickson's article on "Weather and Climate Observation," in The School World for June, 1899, should also be consulted. It deals more fully with instrumental observations, and gives estimates of the cost of the necessary apparatus.

NOTES FOR LANTERN LECTURES.

By B. B. Dickinson, M.A., F.R.G.S.
Assistant-Master in Rugby School.

IV.—The Continent of Africa.

The optical lantern is now so largely used in teaching that there is no need to enlarge on the great advantages of lantern-slides. Geography, more, perhaps, than any subject, gains by illustrations, and its scientific treatment necessitates the use of a far larger number of maps and diagrams than can be contained in the most complete school atlas, or indeed anywhere in collected form. Many of the maps which a teacher must use to thoroughly teach the connection between elevation, climate, vegetation, settlement, and all the complex factors which influence a country's past, present and future development, are only to be found scattered through advanced text-books, scientific atlases and the special publications of scientific societies; and even so the latest information, which is absolutely essential to the teacher of geography, does not exist in map form and needs much simplification before it can be rendered suitable for teaching purposes. All this information is practically inaccessible to the ordinary teacher on the ground of time alone, and, hitherto, it has been impossible to obtain good lantern-slides of maps and instructive geographical views.

To assist the better teaching of geography, the Geographical Association some years ago made a certain number of maps and view slides of this kind, but found it impossible to offer their work to any but its own members. To meet this difficulty the Diagram Company was formed, and in the last two years has issued some 300 coloured map-slides and diagrams illustrating the orographical features, temperature, barometric pressure, rainfall, ocean currents, river basins, zones of vegetation of the continents and their most important divisions, as well as commercial maps, chief commercial routes, political and historical maps. The original maps for all these slides have been specially drawn and designed for projection on a screen, it being found that the ordinary printed map is in most cases far too detailed and confused for the purpose. Moreover, they have been coloured with exceptionally transparent colours, which render them far more effective for lantern use than any other slides published.

In addition to the map-slides, the Company possesses a unique collection of "view-slides" illustrating typical scenery throughout the world; a collection formed through the courtesy of many scientific bodies and travellers interested in geographical education who have kindly lent their photographs for this purpose.

The map-slides can be purchased or hired (*the view-slides hired only*) from the Diagram Company, 27, Victoria Road, Clapham Common, S.W. The map-slides can also be purchased from Messrs. G. Philip & Son, 32, Fleet Street, E.C.

Lecture Notes.

The principles of climate and vegetation are best studied, on broad lines, in connection with some concrete instance, *e.g.*, a continent; and the treatment should be that of a problem to be solved by reasoning, the actual facts, as found by observation, being brought in to prove inferences. In fact, the aim should be to answer this question: Given the area of a country, its geographical limits and position, and the orographical features, what is its climate, the character of its rivers, and of its natural vegetation, and its suitability for habitation?

The following sketch of lecture notes is merely a summary of the first part of a course of lessons on Africa as given to the Army Class by the writer at various times:

POSITION AND EXTENT (*Slide* 1).

(*a*) *Extreme longitudes* 17°W.—51°E. (Central meridian 20°E.)

What other countries have the same longitudes?

What will be the Greenwich time of midday at various places in Africa? How can longitudes give width in miles?

(*b*) *Extreme latitudes*, 37°N.—35°S. What other regions are in the same latitudes? What is the relation between latitude and length in miles?

(*c*) *Incidence of Equator and Tropics* (*Slide* 2).

Notice:

- (*a*) the inequality of area N. and S. respectively of Equator (68%, -32%).
- (*b*) the broad equatorial area (47° = 3,250 miles), 8¾ million square miles. Three-fourths of Africa.
- (*c*) The long, narrow strip N. of 23½°N., not quite two million square miles. One-sixth of Africa.
- (*d*) the short, narrow strip S. of 23½°S., not quite three-quarters of a million square miles. One-twelfth of Africa.

On what parts will the sun be vertical, and when? How far does the region of vertical sun travel in 365 days?

What is the obliquity of the sun's rays in extra-tropical Africa?

What variation is there in the length of day and night?

DIMENSIONS (*Slide* 3). *Length* along long. 20°E. *Breadth* along lat. 10°N., how many degrees? How many miles?

N.B.—1° of long. on lat. 10 = 68 miles (approx.).

AREA. Estimated continental area. 11¼ million square miles, or including all islands, 11½ million square miles, or

3 times Europe = 3¾ million square miles; or

95 times United Kingdom (United Kingdom = 121,000 square miles).

SHAPE AND MAP DRAWING (*Slide* 4).

A sketch map should be accurate in proportions, and made to depend on some simple figure *easy to draw and remember, and based on* the important lines of reference, especially *latitude*.

The figure represented in the slide is formed by drawing a vertical line *six units long*, each unit being marked off. Through these *seven* points lines are drawn at right angles. The two extremes represent lats. 35° N. and S.; the next two *inwards* the Tropics, and the central line the Equator. The line *next above the Equator* must be made equal to the vertical line, which will divide it into two equal parts. This line gives the greatest breadth. The figure formed by joining the extremities of the vertical line and that of greatest breadth will give a sufficient guide for drawing a sketch map. On the same *Slide* 3, three modifications in the figure are shown, by which all the important out-curves and re-entrant angles and the chief sinuosities of the coast are easily found.

SURROUNDING PARTS.—Which parts are warm and which cold seas? What is the nature of the land areas? Where are the points of convergence?

CONFIGURATION (*Slides* 4 *and* 5, *and the Diagram and Hand Maps*).

These slides show the orographical features of Africa (with and without *physical* names) by means of contours, the intervals being worked by shades of brown. The contours selected are the 600 foot, the 1,500, the 3,000, and the 6,000 foot. It should be noted that a line drawn from just below the Equator on the W. coast to the middle of the Red Sea divides Africa into two nearly equal parts of most diverse character, the *N.-western part* being chiefly *lowland*, the *Southern* mostly *high plateaux*. Each individual contour should be followed with great care. *The 600 ft. contour* gives a measure of the accessibility of the interior from the coast and of the value of the lower course of the rivers, and also the position of the great depressions.

The 1,500 ft. contour in the south merely emphasises the plateau formation. In the N.-west it gives the key to the configuration, especially in making prominent the three great fingers of highland along the west and east coasts and in the centre. On either side of the central finger lie great river basins and deserts; to the west the Congo, Tsad and Niger basins and the Sahara; to the east the Nile basin and valley, and the Libyan and Nubian deserts. In the extreme N.-west lie the Atlas mountains.

The 3,000 ft. contour.—In the northern part only a few isolated parts reach even this moderate elevation, but in the southern all the important river-valleys and depressions, the Molopo-Orange, the 'Ngami, the Limpopo and Zambezi, clearly mark off the higher plateaux.

The 6,000 ft. contour defines the highest regions, all of which, with the exception of the Atlas group and a few other isolated parts, are to be found in the east and south, from the Abyssinian plateau and the volcanic peaks of the lake district down to the Drakenbergs and their westerly continuation. *Slides* 6 *and* 7 *are typical sections from W. to E. and N. to S. of the area shown in the orographical map.*

CLIMATE.

(*a*) *Temperature.*—By applying the laws governing the distribution of the sun's heat and its effect on the earth's surface, it should be possible to work out the chief areas of high and low temperature, at least for the extreme portions of the region of vertical sun, and the inferences should be checked by a close examination of the *isotherm charts for the two typical seasons, January* (*Slide* 8) *and July* (*Slide* 9).

(*b*) *Barometric Pressure.*—Following out the data of temperature and the principles affecting the pressure of the atmosphere, the location of the important areas of high and low pressure in summer and winter should not be a matter of difficulty, and, as before, the results can be checked by charts based on observation (*Slides* 10 *and* 11; *isobars for January and July*).

(*c*) *Prevailing Winds.*—As the direct outcome of the relative position of the areas of high and low barometer, the direction of all the prevailing winds can be determined, and to a certain degree their force, at any rate as far as general conditions are concerned; moreover, the likelihood of local disturbances in certain regions can be inferred, if the general laws of the movements of the air be correctly applied. When the survey complete, *the wind charts for January and for July* (*Slides* 12 *and* 13) should be examined.

(*d*) *Rainfall.*—The origin of a wind gives a clue to the water vapour it contains. The temperature and elevation of the land it first blows over give the data necessary for deciding whether moisture is likely to be condensed or no, and at what seasons. But local conditions have so much influence on precipitation that, for details as to the actual amount deposited, we must turn to the Rainfall charts, *Slides* 14 *and* 15, *Rainfall for January and July*, and *Slide* 16, *the Mean Annual Rainfall.*

(*e*) *Ocean Currents.*—The combined effect of temperature and prevailing winds on the great ocean areas must next be examined, and an attempt made to judge of the movements of the surface waters. The locality and direction of all the important drifts and currents can be inferred before turning to the charts for January and July (*Slides* 17 *and* 18).

VEGETATION.—The information gained should now be summed up, and a clear notion formed of what parts of Africa are certainly desert throughout the year, what parts are covered with dense and luxuriant vegetation, and of the intermediate regions; and at what seasons they will be either steppes or savannahs fit for pasturage only or for agriculture. The latitude and elevation must be considered before any idea can be formed of what class of plants may be found in various regions, and local conditions have such a predominant influence that the subject can only be treated broadly until information as to soils and exposure to the sun is more complete, and so we can only arrive at the probability of finding certain plants in a region by a process of elimination of those plants which could not be grown. The general conditions can be seen in *Slides* 19 *and* 20, *Vegetation for January and July.*

River Basins.—An outline map of Africa with all the chief rivers and tributaries (*see the Diagram Outline maps*) should now be used, all the important divides and direction of flow followed out, the river basins defined, and those which belong to the areas of inland drainage marked off from the others (*Slide* 21). The actual areas and their dimensions must next be noticed (*Slide* 22). No estimate of the value of rivers can, however, be made until the orographical features have again been studied in this connection (*Slide* 4). Then the slope and length compared with the Rhine and Thames can be gone into (*Slide* 23), and also the rainfall both in amount and time of occurrence. It will be then seen that all the important rivers have their sources in the region of equatorial rains, and that a large proportion (47 per cent.) of Africa is practically riverless, and that very few are navigable for any great distance from the sea (*Slide* 24). A first grouping of the political divisions (*Slide* 25) will show the immense importance of rivers in the development of Africa, and will serve to introduce a detailed study of the river basins, their configuration, rainfall, especially the times of flood and drought, vegetation, communication, the probable position of towns for the collection and distribution of articles of commerce and the character of the goods exchanged. For this purpose a series of specially designed slides has been prepared: *Slide* 26, the Nile Basin; *Slide* 27, the Congo Basin; *Slide* 28, the Niger Basin; *Slide* 29, the Zambezi; and lastly *Slide* 30, the Molopo-Orange Basin.

Space does not permit of the further discussion of the subject, but teachers and lecturers who may desire to deal with Africa in detail will be able to select suitable slides from the Diagram Company's list, which includes: Political maps in 1837, 1885, and 1890, population, communication, exploration, races, languages, and a large series of slides for a full treatment of the British possessions in South Africa.

A SIMPLE METHOD OF DETERMINING MELTING POINT.

A fifth edition of the "Quantitative Chemical Analysis" of Professors Clowes and Coleman has been published by Messrs. J. & A. Churchill. Several new experiments are described in an appendix, and the following convenient modification of the ordinary method of obtaining melting points appears among them. Teachers of physics and chemistry will be glad to have their attention called to the experiment.

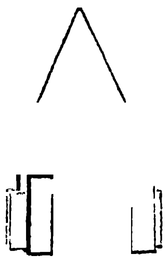


Fig. 1.

The method of procedure is as follows:—A thin square microscope "cover-glass" is cut into halves, a small quantity of the substance is placed between these glasses and is caused to assume a very thin layer by gently pressing and sliding the glasses between the fingers. The glasses are then fastened to a platinum foil holder of the shape shown in Fig. 1. The holder may be readily made by suitably folding the foil and then cutting out a square piece with a pair of scissors. If necessary, the holder and the glasses may be more firmly bound together by means of thin platinum wire. The whole is now suspended in a wide test-tube, in contact with the bulb of a thermometer. The test tube serves as an air bath and is immersed nearly up to its mouth in a bath of sulphuric acid or other suitable liquid. The temperature of the liquid is now gradually raised until the film suddenly becomes transparent, and the temperature is then immediately read upon the thermometer.

The substance may be introduced in the form of powder, of minute crystals, or of thin slices. The moment of fusion is readily seen, since the film of substance, which is more or less opaque before it is melted, becomes suddenly transparent when it fuses. The large heating surface, which is exposed relatively to the amount of the substance used, causes the indication to be very sharp.

In order to prevent undue convection of air it is well to insert a plug of cotton wool in the neck of the test tube. The cover-glasses may be used any number of times; in fact, as long as they remain unbroken.

ITEMS OF INTEREST.

GENERAL.

Reference was made last month to the arrangements by which we are able to find foreign correspondents for members of the French and German classes of those of our readers who teach modern languages. The system of international correspondence as an aid to teaching modern languages has not received the attention in this country that its usefulness deserves. If teachers could be persuaded to try the plan it would soon become adopted in all schools where modern-language teaching is taken seriously. We shall be glad to hear from teachers who would like to try the method with some of their pupils. As Mr. Neville Ross pointed out in his article in the October number, letters are sent to school addresses only to obviate any possible harm which might arise. We should be pleased to have expressions of opinion from any teacher who has tried the system. Such records of actual experience will perhaps do something to extend its adoption.

The committee appointed by the Académie to consider the concessions adopted by the French Minister of Public Instructions as regards the simplification of French syntax, to which we made reference last month, has presented its report. The Académie passed the report of the committee and sent it to the Minister, who had asked them to undertake the criticism of his proposed reforms. As the report was entirely private, nothing has yet been allowed to transpire as to its bearing on the matter at issue. Various French journals have hazarded shots at its contents, but no authentic publication of the report has been made up to the time of going to press. We may feel sure that a committee having on it "la commission permanente du Dictionnaire," one of whose members is M. Ferdinand Brunetière, distinguished for a bitter attack on the proposed reforms in the *Revue des deux Mondes*, will not entirely agree with the findings of the original commission presided over by M. Gaston Paris. Whatever the Académie proposes will be universally accepted, while the Minister's scheme may remain academic or be amended. Consequently students of French need make no change in their course of reading at present—*pace* the Civil Service Commissioners, who announce their adhesion to M. Georges Leygue's scheme of reform. We hope to give in the next number of The School World the verdict of the Académie in full.

The Local Examinations and Lectures Syndicate of the University of Cambridge announce that, in the Examinations in French conducted by them, they will recognise the concessions specified in the Decree, dated 31st July, 1900, of the French Minister of Public Instruction, respecting the simplification of the teaching of French syntax.

THE Board of Education, South Kensington, has issued a new syllabus introductory to their old Subject XXV.—Hygiene. In future there will not only be a "Section I.—Physiography" but a "Section I.—Hygiene." It is no wonder that foreign educationists find British terminology perplexing. Nomenclature notwithstanding, the new syllabus is a distinct advance upon the old. Practical work is now given its proper position of importance; and, what is of still greater moment, we find printed at the end of the syllabus: "It is intended that the instruction in Section I. should be based on experiments performed, as far as possible, by the students themselves, and should be undertaken in a spirit of inquiry or research." Science mistresses who desire to make their courses of work really suitable for girls, whose chief business in the future will be domestic science, will do well to study this syllabus.

THE National Union of Teachers has gained a third seat in the House of Commons. Dr. Macnamara has converted a minority of 693 votes into a majority of 1,335 in North Camberwell. As most of our readers are aware, Dr. Macnamara is the editor of *The Schoolmaster*, the official organ of the Union. With Messrs. Gray and Yoxall, who were members of the last House of Commons, Dr. Macnamara will, there is no doubt, see that the claims and aspirations of elementary teachers are not overlooked, though at the same time the broad claims of education of every grade will receive full attention from all three of these schoolmaster members. How long will it be before the I.A.H.M. or the A.M.A. will have their own members at Westminster?

A REPORT on the visit of the Essex farmers' party to Denmark during May and June last has been prepared by Mr. T. S. Dymond for the Technical Instruction Committee of the Essex County Council. The interesting little brochure has been compiled from notes taken during the trip by members of the party, and from information supplied by the Danish experts. Eight photographs by Messrs. W. E. Watkins and F. Hughes add much to the value of the account of an important experiment in technical education. The visit was arranged to enable Essex dairy farmers to gain an insight into the organisation and practice of the agricultural industries of Denmark, and the results seem to have been sufficiently valuable to make similar excursions in the future highly desirable.

HOW to stop smoking among boys is a difficult question. Every now and then the subject gets into the newspapers, and some decision or other of a school board is recorded. One of the most recent ideas we have come across is that of a reverend member of the Hebden Bridge School Board that school board members and schoolmasters should themselves abstain from tobacco, so that they may denounce smoking with sufficient emphasis to have some effect. We are a little sceptical of the value of the policy of mere denunciation. If it is agreed by physicians, and it certainly appears to be, that smoking has a bad effect upon growing boys, the best plan seems to be for parents and schoolmasters to make it a punishable matter, and never to pass an offence without some suitably severe punishment. After this elementary course of procedure the older boys may be argued with and have physiological facts marshalled before them.

THE questions discussed at the annual provincial meeting of the Assistant-Masters' Association, held at the Manchester Grammar School as we were going to press with our last issue, indicate that the Executive of the Association are anxious to encourage a consideration of subjects outside narrow professional interests. The resolution proposed by Mr. Atkinson, of Rossall School, and seconded by Mr. Munro, of the City of London School, "that at the general meetings of the Association more time should be reserved for conferences on the principles and methods of education," was unanimously carried. The titles of many of the papers brought before the meeting by different members similarly indicate the same tendency. In addition to Mr. Atkinson's paper on "Educational Methods," Mr. McKinley opened a discussion on "The Education Bill, 1900," and the Rev. H. B. Ryley introduced the subject of the "Teaching of Geography."

IT is in this direction the Assistant-Masters' Association should work if they desire to influence secondary education. There can be no doubt as to their motives if they interest themselves chiefly in the improvement of educational methods and procedure. As Archdeacon Wilson said, at their Manchester dinner: "They must not degenerate into anything that could be called a trade union. As long as they placed efficiency of education first, and not their own personal interests, they would have the support of everyone interested in education; but they might easily forfeit this if there was a suspicion of trade unionism about their Association." Moreover, it does not require much faith to believe that, if these things are sought earnestly enough, such considerations as increased salaries, security of tenure, and so on, will be added unto them in due course.

THERE will, we understand, soon be an important addition to the training colleges of London. A college for the training of both secondary and elementary schoolmasters and schoolmistresses, affiliated to and guided by the University of London, is what is contemplated. The college is to be unsectarian; men and women alike are to be eligible for studentships; Government grants are to be taken advantage of, so far as they may serve; but the main cost of maintenance, after grants and students' fees have been allowed for, is to be borne by the London Technical Education Board. Four hostels or halls are to be provided for the residence of students who may come from the provinces. The difficulty of providing suitable buildings is to be overcome, it is expected, by the large sums which two generous donors are likely to supply. The Board of Education, the London School Board, the City Guilds, and parochial trustees, together with various associations of teachers, are all interested in the promotion of the institution.

THE premises of the Royal College of Art, under the Board of Education, at South Kensington, have been modified to meet the requirements of the reorganisation adopted by the board upon the advice of the Council for Art. This council consists of Sir William Richmond, R.A., Mr. T. G. Jackson, R.A., Mr. E. Onslow Ford, R.A., and Mr. Walter Crane. The headmaster of the college is Mr. Augustus Spencer. Monsieur Lantéri is the professor of sculpture and modelling, and the appointments to the professorships of painting, of architecture and of design are likely to be announced shortly. The total number of students to be admitted to the college is 350, of whom 150 may be fee-paying students. All students admitted (either free or on payment of fees) must have satisfied the Council of their ability to profit by the special courses of instruction, to provide for which the college has been divided into an upper and a lower school. Students will be placed in one or other according to their proficiency, and will be required to pass through the four divisions of each school, namely, those for ornament and design, drawing and painting, modelling and architecture. As part of the upper-school course, technical instruction will be given at evening classes in a few of the following subjects:—Book Illustration; Etching and Lithography; Stained Glass; Stone and Marble Carving; Wood Carving; Mosaic; Plaster and Gesso work; Metal work;

Shuttle Weaving; Tapestry Weaving; Embroidery; Furniture and Cabinet work; Pottery, &c. The College was opened on October 16th.

Does zeal for education vary with latitude? Judging from the remarks in a recent letter of the London correspondent of the *Glasgow Herald* as to the observations made by an American Superintendent of Schools on education in Great Britain, this enthusiasm would seem to increase with angular distance from the equator. In the opinion of this observer from the United States, sentiment in favour of education is very lacking in the south of England, while it grows, he thinks, steadily as the Highlands of Scotland are approached—where it reaches a maximum, for the British Isles. We were not surprised to read that "the bewildering number of local authorities responsible for some department or other of education in its various branches was a recurring source of amusement" to the American visitor.

More popular questions have almost eclipsed educational topics during the general election. But here and there references to the importance of an adequate system of national education have found a place in election addresses. Sir H. Campbell-Bannerman, for instance, wrote in his address: "I trust that the whole constructive energy of Parliament and the country will not be devoted solely to the military problem. There is another, which is hardly, if at all, less urgent—namely, the development of education. And if our object is to save our world position, to protect the empire, to foster our national prosperity, and to give employment and happiness to our people, the class-room is a better area for the purpose than the barrack-yard. Territorial aggression is often represented as having for its object the advancement of trade; but while we have been seeking fresh markets with the sword, we have been losing other and more profitable markets by our arrogant supineness and our indifference to education. Our neighbours and rivals have forged ahead of us and have ousted us from lucrative markets, because they give their sons a systematic and intelligent education from boyhood to manhood. And by education I mean not only a special scientific, technical training, but a systematised education from one end to the other, instructing the memory, but also developing the intelligence and strengthening the judgment of the individual. The greatest friend to the Empire would be he who, putting aside our little jealousies as to this or that class of school, brushing away sectarian cobwebs, would establish and extend our educational system for all classes—for the wealthier classes need it as much as the poorer—on a national, comprehensive, democratic basis. If we are to hold our place this must be done, and there is no time to be lost."

The London Society for the Extension of University Teaching has arranged again this year for two courses of lectures for teachers. The lectures are being given at Gresham College, E.C. One course by Professor Earl Barnes on "The History of Education" began on Monday, October 8th, and is being continued every Monday until finished. The second course on "The History of Politics" is being given by Professor Edward Jenks on Friday evenings, and it began on October 12th.

In his admirable annual statement, at the first meeting of the London School Board after the summer vacation, Lord Reay referred at length to the question of higher elementary schools. We have already called attention to the application of the London School Board to have the whole of their 43 separate schools, with their 79 departments, recognised under the recent minute of the Board of Education, and the reply of the Board of Education that the provisions of the Higher Elementary School Minute are not applicable to schools of commercial type, but to departments where the "school of science" plan is to be, or has been, adopted. These facts provided excellent grounds for a full discussion of the question of the place of the higher grade, or higher elementary, school in a system of national education, and Lord Reay's treatment of the subject leaves little to be desired in clearness and fairness.

The main object of a higher elementary school ought to be, said the Chairman of the London School Board, to provide for children whose parents keep them at school, at the sacrifice of wages, in order that they may be better able to earn wages when they begin their apprenticeship. In drawing up the programme of a higher elementary school, the question arises what kind of employment in the district the majority of the scholars are likely to obtain when they leave school. The manufacturing districts, the agricultural districts, and the commercial districts will require a different scheme of instruction. But certain features will be common to all three. In the manufacturing and agricultural districts science will take the place of modern languages, but in centres where, as in London, commercial employment will be prominent, modern languages will have to take a foremost place. Between a general scheme of instruction on literary lines and a commercial scheme, the difference will be very slight. To a clerk the advantage of a general education will be so great that he may well defer the acquisition of book-keeping and shorthand until he has left the higher elementary school and makes use of the evening classes in the Polytechnics.

The instruction in higher elementary schools will be absolutely different from that given in secondary schools on the modern side where the leaving age is higher. In a secondary school modern languages will be taught with a view to give the same literary turn to the mind as is given on the classical side. In the higher elementary school modern languages will be taught with a view to enable scholars to speak them fluently and to write them correctly. The higher elementary school will be differentiated from a secondary school in method and aim; it will be also differentiated from a technical school, because it will not give any special instruction in any trade or handicraft. The higher elementary school does not compete with the modern side of a secondary school, and it does not compete with a technical school. Neither is it a preparatory school for either. The object of the higher elementary school is not to divert those who would enter the ranks of skilled artisans, but to give them such tuition as will increase their skill and give them such general education as will make them better members of the social organisation to which they belong.

The Executive Committee of the Association of School Boards of England and Wales have issued a memorandum with reference to the administration of the Board of Education of the minute for the establishment of higher elementary schools. It is pointed out that higher-grade schools have been in operation more than twenty years and are the natural outgrowth of the elementary schools; that their establishment by school boards was encouraged and fostered by the Education Department. "The schools were recognised for grant purposes by the Education Department and by the Science and Art Department. Recently, however, the boards have been prevented from developing this part of primary education, and some schools actually built for the purpose of higher-grade instruction have been refused grants by South Kensington. The boards are now told by the Board of Education that 'there is no authority in law for school boards to carry on higher grade schools,' and the Board of Education 'is unwilling to encourage such schools, excepting where it is proposed that existing schools of science are to be adapted to the new minute,' and even in such cases the boards are to be allowed no real freedom of action, the dictum of the

Board of Education being that such schools shall be 'schools of science of elementary character,' a narrowing down of the construction of the minute which is not warranted by anything contained therein, and which, if carried into effect, will certainly degrade and curtail the operations of the very schools for whose benefit the minute was designed." The memorandum concludes by urging "the removal of all hindrances and restrictions of the development of the higher primary education so much needed by the bulk of the children of this country, who can never participate to any extent in the advantages afforded by what is known as secondary education."

THE ideal schoolmaster, as he is pictured by writers and speakers, possesses a remarkable combination of qualities. Fortunately, perhaps, he has merely an imaginative existence. Mr. R. G. Hawtrey has been describing him lately, in the *National Review*, from the point of view of the schoolboy. This authority informs us that a gift of sarcasm, judiciously employed, is one of the most powerful possessions of the schoolmaster. "The sarcastic master need scarcely ever set a punishment," "his weapon is irresistible," and so on. But there are grave dangers in the use of this instrument of torture in the class-room. The master who indulges in sarcastic remarks surely makes his desk into "coward's castle." The contest is too one-sided. Either the boy is afraid to "answer back," or else is too much of a gentleman to want to reply. Older schoolmasters know that sarcasm is the expedient of the young beginner in teaching. As experience accumulates it is recognised that rigid justice becomes the possession after which the master strives. We strongly advise those of our readers who have come across Mr. Hawtrey's article to read Mr. Sidgwick's lecture on discipline. It will form an effectual antidote.

WHERE is the best English spoken? According to Mr. C. F. Remy, of Indianapolis, who has an article on the subject in the September *School Review*, of Chicago, it is, as far as England is concerned, in that section of our country which lies north and east from Oxford and London. "Here are the great universities of Oxford and Cambridge, and here have lived most of England's literary men. Even in this part of England it is only the cultured classes who have not the "h" difficulty. The initial *h* is not only dropped, but more frequently than elsewhere in England the aspirate is prefixed where it should be omitted. Although the difficulty in the pronunciation of the aspirate does not extend to the cultured classes, unless perhaps occasionally in such words as *which* and *what*, nevertheless many educated persons in and about Cambridge and Oxford have fallen into errors quite as bad. For example, they do not give the letter *r* a uniform sound, and many educated men of society, and unfortunately they are growing in number, have disgraced the Queen's English with their 'deont you kneow.'"

AN article in the current number of *The Fortnightly Review* on "The Public Schools and the Public Services," by Mr. J. C. Tarver, deserves very careful attention. Taking the merits of the English public school system for granted, Mr. Tarver emphasises the relative freedom of the public schools, and explains that they receive no financial aid from the State. The problem he attempts to solve is "to give the public-school system such an organisation, such a position with reference to the State, that it will not be driven out of the field by the Board of Education, that it will be given the opportunities of reform and improvement where reform and improvement are possible and desirable." The present unorganised connection between the public schools and the State has three weak points. "In the first place, the Departments are at liberty to act separately, to make what regulations they please independently of one another. In the second place, these regulations can be made without reference to, or consultation with, the public schools, which indeed possess no representative organisation which could be conveniently referred to or consulted. In the third place, examinations, and above all a single examination, can only test a small part of the qualities which are desirable in a public servant." Mr. Tarver's remarks are always sensible, and his suggestions in this article will, it is to be hoped, be properly studied.

WE last month called attention to the book lists published by the National Home Reading Union for the session 1900-1901, and referred to the great variety of subjects from which members could choose. We have before us the first part of the twelfth volume of the *Magazine* of the Union, in which there are numerous articles by well-known writers on the different subjects selected for the coming winter's work. Mr. H. T. Mark, of Owens College, Manchester, contributes a paper on "Some Applications of Psychology to Education."

THE Civil Service Commissioners announce that an Open Competitive Examination for at least one junior appointment in the Supply and Accounting Departments of the Admiralty will be held in London, Edinburgh and Dublin, commencing on November 27th, 1900. The limits of age for these situations are 18 and 20. Application forms, obtainable from the Secretary, Civil Service Commission, S.W., must be returned to him on or before November 8th. A fee of £6 will be required from each candidate attending the examination. The examination will be in the following subjects, viz.:—Class I. Mathematics, I. (Elementary, including Arithmetic), Latin, French or German; English Composition; and Geography. Class II. Mathematics II. (advanced); German or French; Greek; English History; Chemistry and Heat; Physics; and Physiography and Geology. All the subjects of Class I. may be taken up. Only two of the subjects of Class II. may be taken up, and if one of these subjects be a modern language it must be different from the modern language selected in Class I. No candidate will be eligible who fails to pass a qualifying examination in Arithmetic and English Composition.

THIS competition is specially suited to those boys in the highest forms of secondary schools who wish to enter the higher branches of the Civil Service without the preliminary expense of a University career. The syllabus (which is supplied with the application form) shows that, though the extent of the knowledge required is somewhat above that wanted for the Second Division Examination, it is not too great for a good all-round boy who just misses being up to scholarship standard. The commencing salary attached to these situations is £100, rising to £120 after two years, and thence by yearly instalments of £10 to £200, and afterwards by £15 a year to £350. The posts which it is possible to obtain by promotion carry with them salaries ranging to £900.

THE number of examinations such as the above, by means of which it is possible to proceed direct from school to the higher division of the Civil Service, is very small, and the chances of being promoted from the lower division of the Civil Service to the higher are becoming less and less. The tendency is to reserve the better posts for University men. We are, therefore, not surprised to see that the one elementary subject which can at present be offered in the Class I. Home Civil Service and Indian Civil Service examinations, *i.e.*, Elementary Chemistry and Physics, will be removed from the syllabus after the August 1901 examination.

WELSH.

NOW that the Welsh Central Board have their certificate examinations in full working order, there is an especial interest in watching how far these are likely to ameliorate the strain felt by teachers in working for public examinations. The one point for the Board to avoid is that of giving ground for the fear (not altogether unnatural) that the imposition of their examinations would be but the substitution of one task-master for another, and that the new *régime* might soon prove as intolerable as the old one. The Board has adopted a course which will go far to allay any such *prima facie* fear. In the recent examination the class-lists have been issued quite separately to the different schools, and the competitive element made so prominent in the plan of a single list for the whole of the candidates has been minimised. We venture to think that this is a distinct educational reform, and heartily congratulate the Central Board on the change which they have made.

ONE great difficulty which has had to be met in connection with Welsh education has been the provision of schools for isolated districts. The solution which has been attempted in the intermediate school system is that of establishing a large number, many of them comparatively small, and so to say, taking the schools to the people. It must be remembered, however, that such a system involves, to a large extent, the isolation of *the teachers*, and one of the most pressing needs is the creation of an *esprit de corps* amongst the teachers. There are, according to the last report, 72 headmasters and 21 headmistresses. There are 166 assistant-masters and 184 assistant-mistresses, thus making a total staff of 443 teachers. If the means of communication were easy, there would be a grand opportunity for forming an educational parliament, such as no portion of Great Britain has been able to contemplate hitherto. As it is, only tendencies can be noted, and these are of considerable significance.

THE Central Board has itself held conferences in different parts of Wales, at which such important subjects as the Teaching of Modern Languages and Manual Training have been discussed by teachers and members of governing bodies. Branches of the Teachers' Guild have been formed for some time at Aberystwyth, Bangor and Cardiff, and recently one has been established at Swansea. In elementary education, the branches of the National Union of Teachers are well organised, and it is quite clear that the progress of secondary education will greatly assist that of the elementary teachers. In connection with elementary education, it is noteworthy that some of Her Majesty's Inspectors of Schools have been very active lately in calling meetings of teachers in their districts explaining the significance of the changes in the Code, and drawing attention to educational principles involved. Mr. R. E. Hughes has addressed the teachers of the Swansea district on the Kindergarten and the Curriculum of the Primary School. These addresses have been republished by the Swansea School Board, and are very interesting by their reference to educational principles. Principal Salmon has made a valuable study of the Welsh Charity Schools, a movement comparatively little known, but which must attract those who are interested in tracing the democratisation of schools. There are instances of the arousing of an educational spirit "from within," which is more vital to progress than even the record of bricks and mortar, rates and grants, in which matters the recent record of Wales is, as Dominie Sampson would say, "prodigious."

THE Intermediate Schools, or the County Schools, as they are more familiarly called, are beginning to "tell" in the University Colleges. Not only do they provide a large number of in-coming students at Aberystwyth, Bangor and Cardiff, but the entrance scholarship lists of those colleges show that some of the very best of the entrance scholars come from the County Schools. This is the happiest of results. The marvel is the quickness with which such fruit has been borne.

SCOTTISH.

THE Duke of Argyll recently presided at the opening of a new and splendidly-equipped technical school in Paisley. In referring to the benefits of industrial education, his Grace alluded to the conservatism as regards methods and machines which too often marks our masters of industry as compared with those of America and Germany. A good education in scientific principles will make our future leaders of industry and commerce more accessible to new ideas and more suspicious of old methods. Too great reliance has been placed hitherto upon the opinions of experts, and no intelligent effort has been made to examine the grounds for such opinions. Recent events have considerably shaken this faith in specialists, and if it leads individuals to bring a trained intelligence to bear on all the operations in which they are engaged, our past bitter experience will not have been in vain.

AT the monthly meeting of the Aberdeen Chamber of Commerce the prizes and commercial certificates of the London Chamber of Commerce were presented to the local successful pupils. Mr. James Bryce, M.P., in addressing the pupils, congratulated the chamber on the great success which has attended their efforts to promote commercial education, a subject of vital importance to the whole nation. The competition of other countries is, said Mr. Bryce, becoming keener and better organised, and there is reason to fear for our commercial supremacy if every effort is not made to utilise to the fullest all the material advantages we possess, as well as the intelligence and industry of our people. Mr. Bryce said he came back from Paris more than ever convinced of the urgent necessity for keeping the youth of the country up to the highest level of commercial and scientific efficiency.

THE annual meeting of the Educational Institute of Scotland was held in Edinburgh on the 22nd ult. Mr. Menzies, Kirriemuir, was elected president. The interest in the proceedings seems to be steadily increasing. The hall of the high school was literally packed for the greater part of the time. There was a tendency in the meeting to dissipate its energies on the discussion of unimportant and sometimes irrelevant details, while the great and pressing educational questions of the day were dismissed *sans cérémonie*. Thus the report of the Higher Education Committee was given by the convener in a couple of sentences and adopted by the meeting without discussion, while an hour was spent wrangling as to the best method of electing a parliamentary committee.

CANDIDATES for Scottish seats in Parliament have been systematically interviewed by representatives of the various educational bodies in the north. As a result it is safe to say that a very large majority of the members will go up to Saint Stephen's pledged to favourable action in regard to the questions of tenure, superannuation and enlarged school-board areas. The demand of the teachers in higher-class schools for a pension scheme met everywhere with strong support, and there is good reason for hoping that such a scheme will be included in Lord Balfour's next Bill.

IRISH.

THE education course conducted by Mr. Keatinge, of Oxford, in Alexandra College, Dublin, concluded on the 11th inst. Mr. Keatinge will visit Dublin again on December 10th to conclude his course, which forms part of the preparation for the Examinations for Teachers in Trinity College, Dublin, to be held on January 3rd, 1901. During his October visit criticism lessons with discussions were given at Alexandra College from 4 to 7 p.m.—two lessons each day. The subjects were arithmetic, geometry, Latin syntax, Latin translation, English history (modern and early), and French language. The lessons were given by Mr. Keatinge himself, or by some of the teachers attending the course. In the evening an hour's lecture was given by Mr. Keatinge on general educational principles and methods, or the special subjects of the lessons.

THE course was attended by thirty-five or forty teachers, and excited much interest and discussion. Eight days were given to Alexandra College, four to Loreto Abbey, Rathfarnham, and two to the Training College for Primary Teachers, Marborough Street. In December, the subjects will be advanced Latin composition, geography, English language and composition, English literature and natural science. During November, Dr. Kingsmill Moore, Principal of the Training College, Kildare Street, will lecture at Alexandra College on "The History of Education," and some of the books prescribed for the Trinity College Examination.

CURRENT HISTORY.

OUR fathers used to talk of the "Dark Ages." We have learned better than that and are beginning to understand those periods concerning which our pastors and masters were in the dark. We call them now the Middle Ages, and, having studied them, we are returning to many of their ways in matters political, social and religious. We have trade-unions to match the gilds, and speak of "blacklegs" as our ancestors spoke of "regrators and forestallers." And now, in the midst of a general election inspired by successful war, we hear of "traitors" to the country. Many a reader may have heard, these last few weeks, speeches and outcries which will have helped him to understand and even sympathise with the feelings of those who printed a famous list headed: "These are Straffordians—betrayers of their country." The date of that list was 1641. If we go on at this rate, we shall perhaps come to understand the rival *attainders* of the Wars of the Roses.

EVEN nature seems to conspire with our world-wide commerce to help history repeat itself. For, among other revivals of mediæval ways, we have now imported *the* plague. How glibly our text-book writers have lightly dismissed the events of 1665 with a commonplace, generally to this effect: "But now with improved methods of building, &c., these 'scourges of God' have disappeared from our midst." Have they? The folk of Oporto and of Glasgow are not so sure. We *hope*, of course, that improved sanitation *has* done something and that we need not be in a scare. Our optimism on all material circumstances still allows us to read with apathy the records of the "Black Death" of 1348 and following years, of *the* Plague of London, "so-called because it was the last of those dreadful visitations," and even of the cholera years of 1832 and 1855.

WE have heard complaints from the Liberals that the Government has brought on a General Election on an "old register." Certainly the doings of Registration Courts have mingled strangely in our daily papers with election addresses and election results. That, at any rate, is a phenomenon without parallel in the Middle Ages. In what magnificent ignorance we are with respect to the early history of Parliament! Our best writers can only guess at the meaning and significance of the Acts of 1430 and 1432 and their guesses differ one from another. In other words, it is difficult if not impossible to know who then were "on the register," how they got on, or how they made good their claim to vote or not to vote, whichever of these they thought the more desirable. The Tudors could enfranchise or disfranchise boroughs at their will. How this prerogative had been lost in the line of the Stuarts, our text-books are not clear about. Perhaps nobody knows.

WHAT *is* happening in China? The "Powers" are there, with their armies and fleets, but we, who are outside the circle of diplomacy seem to be as ignorant of what is really happening or going to happen as if there were no telegraph or newspaper. The last crusade, as preached by the German Emperor, seems to be as much in danger of being spoiled by European jealousies as that famous series of crusades that were preached by Peter, the Hermit and Bernard of Clairvaux. It is not very flattering to human nature, but it is a fact that the only successful wars "on behalf of the Cross" have been conducted by persons or States that had a direct and undisputed material interest in their success. As examples we may quote the Albigensian crusade of the 13th century, the Mexican and Peruvian crusades of the 16th and the Soudan crusade of this end of the 19th. In this last, France must not share even to the extent of "Fashoda."

FROM BEOWULF TO LAMB.[1]

MR. WYATT begins with Beowulf and ends with Charles Lamb, and he does it ably and with all "the spirit of reverence" upon which he insists, in something just over two hundred pages. It is a stupendous task, which would tempt most men into compiling a history instead of writing one, but Mr. Wyatt has chosen the better part and produced a volume which is almost unique, and well deserving of a place beside Mr. Stopford Brooke's widely-known work on the same subject. The author carries his conciseness to a most noteworthy perfection; his lucidity is remarkable, and his teaching method begins at the right end by demanding that the student who would derive any real benefit from his pages must precede his study of this manual by a reading of at least one of the works of each author who is dealt with. To assist in this work Mr. Wyatt has compiled a list which, if it is not very long, is still singularly comprehensive, and cannot be in any degree reproached as supplying merely milk for babes. This procedure is in itself unusual, for those who know most about the way in which students read the class of book known as "a manual" know that, as a rule, they do not read any of the authors at all. Mr. Wyatt, however, recommends them to begin with "Beowulf," although he does not specify any edition or translation which might be used. This is rather a striking omission, because a reader can hardly be expected to learn Anglo-Saxon in order to accomplish this very unexciting preliminary task. The student who should essay the difficulties of such an undertaking for such an end would indeed be on the way to become either an Admirable Crichton or a pestiferous prig; and Beowulf is such a combination of Saga and sermons that to read it in the original as a literary task, set previous to preparing for an ordinary examination, would damp the ardour of all but the most patient and plodding students.

Mr. Wyatt, by way of illustration, gives an episode from the poem which he and the late William Morris assisted in preparing, and we are thereby induced to assume that he wishes his students to use his own edition; but even in this extract he uses several words which are neither Anglo-Saxon nor English, and only leave more confusion in the mind than the original itself would probably do.

However, the author gets quit of Beowulf in seven pages, and thereupon settles himself upon much firmer and more attractive foundations. When he approaches the period of Chaucer we begin to see the masterly way in which he is able to present, in a series of miniatures, all the leading literary developments of the time; and this procedure, with a blending of most happy facility and clearness, he continues throughout the volume. His appreciation of the historical groundwork out of which successive styles of writing flowed is an evidence of wide, painstaking and sympathetic study, although his statement, that to roll the typical Frenchman and the typical German of to-day into one is to obtain a blend not so very much unlike the Chaucer of the fourteenth century, seems on examination to be rather an academic fancy than a truly suggestive estimate. His admiration of Chaucer, however, appears to be soundly based, and he reinforces his estimate by the well-known criticism of John Dryden. Langland he deals with more sparingly, and perhaps he does not sufficiently note the fact that Chaucer and Langland are the Horace and the Juvenal of early English satire. This is a point often left untouched, and Mr. Wyatt might not unjustly plead the exigences of space in his treatment; but it is a contrast of extreme value in dealing with the after developments of satire which form so large a portion of English literature, especially in the Tudor and Stuart epochs.

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[1] The "Tutorial History of English Literature." By A. J. Wyatt 222 pp. (W. B. Clive.) 2s. 6d.

With a swift transition Wyatt and Surrey are introduced, and again Mr. Wyatt's critical acumen is displayed to the best effect. When he comes to Shakespeare the reader feels that condensation must have seemed to him an effort and a duty from which (like most duties) he would have been glad to obtain a temporary release, and Marlowe, Shakespeare and Ben Jonson evidently fill so much space in his thoughts that the lyrists of English literature, who about that epoch were becoming a great force which continued to grow in strength and dignity, are almost excluded from notice. From Spenser to Milton Mr. Wyatt falls back again upon his customary method of desperate conciseness, and indicates all the leading features of the epoch with unfailing precision and a complete philosophical grasp.

The author's criticism of "the Age of Pope" is marred by a slight defect or two. He is scarcely fair to Swift, and much less than fair to Daniel Defoe. The latter, he asserts, was one of the most inscrutable characters in our literary history, and thus much is true; but why say that Defoe at a certain stage of his career—as editor of a Jacobite journal in the Whig interest—"can have had no principles left"? An estimate like that either carries conciseness over the boundaries of all that is ungenerous, or it is one-sided. If, also, Mr. Wyatt's appreciation of Collins leads to a more extended study of his works he will have done one signal service by his book; but here again he rather injures his own reputation by estimating Collins as "in some sort an eighteenth-century Shelley." If so, it was a very inferior sort, for Collins, with many undeniable talents, never had anything like that irresponsible gift of gorgeous imagination which could lead Shelley to write "Time, like a dome of many-coloured glass, stains the white radiance of Eternity, Until Death tramples it to fragments," and many other suggestive passages of the same kind.

In these instances, and in others that might be noted if the general high merit of this volume did not tend to discourage any appearance of hypercriticism, Mr. Wyatt will be found by discriminating students to be a little over-weighted by the necessity of producing a work in a small compass which demands at least twice the number of pages at command. In all questions of taste everyone has a right to an opinion, and probably no critic can be entirely fair. An author of a manual which must go into a very limited space cannot possibly give sufficient illustration to justify many of his comments. It is a real literary triumph to produce a work of this order which shall be at once thoroughly alive and personal. This Mr. Wyatt has very ably, and in some respects brilliantly done.

The manual deserves to be widely read, and no student who follows Mr. Wyatt and goes through his preliminary course of reading will rise from the study he has undertaken without a great and generous acquaintance with nearly all that is significant in English literature.

EDUCATION AS THE HIGHEST FORM OF EVOLUTION.[1]

"FROM many points of view, the educator's profession seems mean and profitless enough, compared with those that make more noise in the world; but when it is recognised to be the highest phase of the world-process, both it and he assume a very different aspect. Then teaching is seen to be the noblest of professions, and that which ought to call for the highest devotion and enthusiasm." These are words from the late Mr. Davidson's preface to the book he somewhat inaccurately called a history of education, and they indicate the lofty views which the author possessed of the teacher's business.

Education is here regarded not merely as a science, nor simply as an art, but as voluntary evolution. Its history consequently begins at the moment when man started consciously to guide his life towards an ideal end. It is clear, therefore, that there is nothing to be written about these beginnings, of which from the nature of things there is no record. Since, in his development from the brute condition, the path of man's upward journey has passed through the stages of savagery, barbarism, civicism or civilisation, and is now advancing to humanism, the history of education can, it is argued, be best divided into savage, barbarian, civic, and human, and this division of the subject he adopts. The volume is divided into two books; the first is concerned with savage, barbarian, and civic education; the second considers human education.

Savage education is necessarily not conscious and is rightly merely glanced at here. At this stage education is mainly imitation; it wholly consists in learning how to obtain the necessaries of life for self and family, and how to propitiate the unseen powers supposed to be active in nature. The barbarian stage of culture begins when men learnt to control fire, wind, and other natural forces. At this juncture castes arise, and each class receives a distinct education. All education was, however, theological, and this involved the serious drawback of the existence of much superstition, which may, indeed, be regarded as the distinguishing mark of barbarian culture, though it lasted much longer. Three families rose out of this condition of savagery, the Turanian, the Semitic and the Aryan, and the culture of all the ancient nations included in these families is fully described.

The passage from barbarism to civilisation is accompanied by the development of individualism. "Institutions do not disappear, any more than did nature when they arose; but man now slowly becomes master of them, and rises to self-direction, under institutions, that is, to true, moral freedom." Only the Semitic and Aryan races rose above barbarism. "The peoples that best represent civic culture are the Semitic Jews, and the Aryan Greeks and Romans, who, in their turn, united to make possible the final, or human, type of culture." This section of the book provides a good account of the leading characteristics of Jewish, Greek, and Roman education.

The second larger division of the volume is devoted to a consideration of human education; this is accomplished under three main divisions—first, the supernatural beginnings of humanism; second, mediæval education, and, third, modern education. The beginnings of humanism are dealt with in four chapters concerned respectively with Hellenistic education, the Christian "Catechetical School" of Alexandria, Patristic education, and Muslim education. The third division begins with education in the fifteenth century, a fact which sufficiently describes the scope of the second and third divisions of the part of the book dealing with human education. To most teachers, we think, the last hundred pages of the volume will prove most interesting, though those readers already familiar with the broad generalisations included in the theory of evolution will find here an excellent illustration of the universal application of evolutionary ideas.

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[1] "A History of Education." By Thomas Davidson. viii. + 292 pp. (Constable.) 5s. net.

Such is very roughly the scope of the book. We can thoroughly recommend it to teachers as worthy of a place among their works of reference. Of course, as Mr. Davidson belonged to New York, he saw many questions from the American point of view; at the end of the chapter on nineteenth-century education, when the new education of modern times is to be considered, for instance, we are told (p. 244), "we must confine ourselves to its progress in the United States, in which perhaps it has celebrated its noblest triumphs." But this will be all the better for British teachers. It is an excellent experience to see things through another's eyes, and there is, perhaps, a tendency for teachers to become a little narrow.

Not the least good the book is likely to do is to raise the teacher's estimate of his profession. There is something distinctly tonic about many sections of this useful book. Here is an example (p. 275): "A professionally trained teacher, without a background of culture, is a mere pedant, who can never communicate a love for study, or awake the highest interests in the souls of his pupils. But it is not enough for teachers to have culture; they, of all people, must be endowed with the missionary spirit. The teacher who does not feel himself, or herself, an apostle with an important human mission, but looks upon the teaching profession as a mere means of making a living, had better seek some other occupation . . . . If the teachers of the nation, with a due sense of their power and importance, would, without hope or desire for material reward, form themselves into an association for the higher education of the bread-winners, as the teachers of France are doing, and each devote a couple of evenings a week to the work, they would soon elevate the culture of the whole people, and remove the worst dangers that threaten society. Poverty, vice and degradation would, in large measure, disappear, giving place to well-being, virtue and nobility. There is no more patriotic work than this; for it is not amid the thunders of the battle-field, where men slay their fellow-men, that the noblest civic laurels are won, but in the quiet school-room, where devoted patriots, men and women, combine to slay misery, meanness and corruption."

AN INSPECTOR'S NOTE-BOOK.[1]

ANYBODY can write on educational subjects write something, that is; but very few educationists can manage to write what is likely to be really useful to practical teachers. We have read this book from beginning to end with a view to properly estimating the use it is likely to be, whether to acting schoolmasters or to probationers, and we have failed to discover what good purpose the essays, which make up the first hundred pages of the book, are likely to serve. Of the memoranda which are comprised in the seventeen appendices it will be more convenient to treat later.

The author, who is an inspector of schools for the London School Board, takes himself a little too seriously. On p. 25 he is in disagreement with Professors James and Munsterberg; on p. 26 certain views of Prof. James are described as false and misleading; on p. 60 he suspects confusion in the writings of Herbert Spencer; on p. 70 he dissents from more of the conclusions of Prof. James; on p. 82 he patronises the late Dr. St. George Mivart; on p. 87 the late Prof. Huxley is found to be guilty of presumption, and on p. 95 the author is in disagreement with Prof. Armstrong. These are instances marked during our reading of the volume; there are doubtless other cases we have missed, but even as they stand it is not a bad record for a hundred pages.

The first person singular is far too much in evidence to be pleasant to the reader of the volume. It is of more importance to the student to learn what has been found most useful by a body of teachers than to hear the views of a single individual on educational things in general. We know no individual who has a right to adopt a tone of authority on the teaching of all subjects. And when one finds the author of this volume passing his opinion, for instance, on the teaching of elementary chemistry (pp. 94 and 95), on the teaching of "varied occupations" (p. 105), on domestic science teaching (p. 122), on instruction in grammar and composition (p. 137), and so forth, the thought will obtrude itself that more valuable reading can be obtained elsewhere. When in addition to this versatility we find the author does not hesitate to place his views on the teaching of chemistry, to take one example, by the side of those of such specialists as Professors Armstrong and Perkin, we suspect there is something wrong with his mental perspective.

We should surmise that this is the author's first book, and that it has been written hurriedly. Psychological terms are too common; indeed, their frequent introduction will in many places make it well nigh impossible for the ordinary teacher, who is unacquainted with the particular nomenclature, to understand what is meant.

The second part of the volume is, however, free from most of these blemishes. It consists of appendices which fill the last fifty pages of the volume. They are merely memoranda which the author has, in his official capacity, had to prepare for the guidance of the teachers and managers of the board schools of London. They are better described as laboratory notes, mere data which may some day be useful to the synthetic thinker with a gift for generalisation.

RECENT SCHOOL BOOKS.

Modern Languages.

Petits Chefs-d'Œuvre Contemporains. Edited by J. Lazare. 108 pp. (Hachette.) 1s. 6*d.*—Half-a-dozen excellent short stories, averaging ten pages in length, and all of them likely to be read with interest by children. The notes consist largely of renderings of difficult phrases. The vocabulary is not full enough. The printing is very good.

Le Songe d'Or, and Other Stories. Edited by E. Weekley. 119 pp. (Blackie.) 1*s.* 6*d.*—In the case of this little collection of short stories the authors belong to an older generation, and there are fewer *néologismes*. The best-known are undoubtedly Mérimée's capital "L'Enlèvement de la Redoute" and Gautier's fantastic "Le Pied de la Momie;" the remaining three stories almost equal them in interest. It is a welcome feature that the notes are written in French. It is to be hoped that with the more general acceptance of the "Reform" principles the number of books annotated in the foreign language will increase. Mr. Weekley has added, as an appendix, a number of useful sentences for translation into French.

Cours de Grammaire Française Élémentaire. Par W. G. Hartog. 64 pp. (Black.) 1*s.* net.—Teachers who believe in the use of the foreign language in their classes are often hampered by the absence of just such a book as this. It is a handy little book, written entirely in French. It is a pity that there is no small type; a great many of the exceptions could have been printed in this way. At present they occupy too much space. The beginner has no need to trouble about *chacals*, *soupiraux*, etc. It would appear to be particularly suitable for learners on the Reform lines in their second year. To write such a book was a happy thought, for which we have to thank Mr. Findlay, and Mr. Hartog earns our gratitude by the conscientious way in which he has carried out his task.

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[1] "Problems in Education." By William H. Winch, B.A. vii.+157 pp. (Swan Sonnenschein.) 4s. 6d.

The Tutorial French Accidence. By E. Weekley. 318 pp. (Clive.) 3s. 6*d.* -This is the third edition of a grammar which has become justly popular owing to its lucid arrangement and general trustworthiness. There appear to be no changes, except that, in order to meet the requirements of London Matriculation and the Cambridge Senior Local, a number of continuous English passages have been added for translation into French, and the English-French Vocabulary has been enlarged so as to include the words occurring in these continuous passages. A key containing French versions of these passages by Mr. Weekley and M. A. Dedet can also be obtained of the publisher.

Heine, Buch der Lieder. 242 pp. (Dent.) -The appearance of an edition of Heine's "Buch der Lieder," following closely on the late Professor Buchheim's "Heine Anthology" (Golden Treasury Series), seems to point to the growing popularity of the great German lyric writer in this country. Let us hope that ere long his own countrymen will forgive him for having been born a Jew. Messrs. Dent's edition is for the book lover. Notes and introduction are carefully avoided, but special attention has been given to the text and general get-up of the book. Professor Rippmann, who edits the volume, has followed the fifth edition—the last one revised by the poet himself. We have examined the text of several poems, and are satisfied that the editor has done his work with great care. We do not see why the year of issue should be printed on the back of the cover, when it figures elsewhere in the volume. It seems to us quite unnecessary. We hope that the enterprising publishers of the volume will meet with sufficient encouragement to give us a series of masterpieces of continental authors, clothed in the same tasteful garb.

The Facts of Life (*Die Thatsachen des Lebens*). Part I. Home Life, The School, Travelling, Plants. By V. Bétis and H. Swan. xxii.+122 pp. (Geo. Philip.) 3s.—The book contains, by way of an introduction, an account of the advantages of the "psychological method," a term applied to the English developments of the Gouin method. It may be assumed that most teachers are familiar with these. The volume before us is printed in indifferent German type, and there are slips here and here. We are surprised to find such old-fashioned spellings as *Verzeichniss*, *Waaren*, *Sammt*, etc. The language is idiomatic on the whole, occasionally rather heavy in style. Teachers will find the book useful for the purpose of testing the vocabulary of their pupils.

Daudet, Tartarin de Tarascon. Edited by Otto Siepmann. xviii.+165 pp. (Macmillan.) 2*s.* 6*d.*--To edit the humorous tale of Tartarin's adventures was evidently a congenial task for Mr. Siepmann, to whose series this volume makes a valuable addition. From a teacher of so much experience we expect a good introduction, and in the notes just as much information as the schoolboy will find useful; and we are not disappointed. The fourth appendix contains an interesting chapter on word-formation. The book is well and carefully printed. The "Word and Phrasebook" and the teacher's "Key to the Appendices" have also been issued.

Classics.

Greek Testament Reader. By T. D. Hall, M.A. 142 pp. (Murray.) 2*s.* 6*d.* -The idea of this book is fresh and good. It is meant for junior classes, and also for private students who have a little knowledge of Greek, for whom help in accidence, at first full and afterwards gradually decreasing, is given, to enable them to read in the original a concise outline of our Lord's ministry and teaching, chiefly from St. Mark, and selections from five chapters of St. Paul's epistles. In the text a few noteworthy changes from the "Textus Receptus" have been adopted from Westcott and Hort, and the notes are marked by sound exegesis. We can heartily recommend the book as likely to fulfil its purpose. There are a useful appendix on syntax and a full vocabulary. Also the print and general appearance are good and attractive.

Three new composition books have reached us this month, viz.: *The Fourth Form Latin Prose Book*, by E. C. Cumberbatch, M.A., 109 pp. (Longmans), 1*s.* 6*d.*; *First Latin Sentences and Prose*, by K. P. Wilson, M.A., 340 pp. (Blackwood), 2*s.* 6*d.*; *Exercises on the Syntax and Idioms of Attic Greek*, by W. H. D. Rouse, M.A., and J. M. Sing, M.A., 184 pp. (Rivington.), 3*s.* 6*d.* —These books all contain well graduated exercises for translation; the second is particularly full, and the third has, in addition, appendices, which should be found useful, of Greek idioms, metaphors, and proverbs. But we are not convinced that new volumes of the kind are wanted. There are numerous books of exercises, both Latin and Greek, in the market, which are amply sufficient for the classical master to give any amount of practice to his forms, if he will but take a very little trouble in the way of turning and varying the materials at his command therein. However, these new books will all serve admirably if he simply wants to work through something fresh—which is to say that they are all very good of their kind.

The Catiline of Sallust. By G. H. Nall, M.A. xix+203 pp. (Macmillan.) 1*s.* 6*d.*—This book ought certainly to make its way as the school edition of Sallust's monograph. The editor gives a very clear historical introduction to the period of Catiline's notoriety, with an account of the course of his conspiracy and the attitude taken up towards him by public men. In the text the forms used by Sallust himself are retained, and there are continuous marginal summaries of the subject-matter. The notes are scholarly and ample; points of doubtful reading or interpretation are fully discussed, and nothing seems to have been omitted. Phrases, with reference to the chapters where they occur, are given in the vocabulary—a point of much helpfulness to the student.

The Proem to the Ideal Commonwealth of Plato. By T. G. Tucker, Litt.D. lxxx.+244 pp. (Bell.)—The sub-title of this book claims it to be "An Introduction to the language and method of the 'Socratic' dialogues," and anyone using it will, we think, find the claim to be well sustained. Professor Tucker includes in the "Proem" the whole of Book I., and Book II. as far as p. 369 B. This division is justified by the fact that the first ten chapters of II. consist of a longer and more elaborate setting forth of the arguments of I., with the additional advantage of containing some of those long speeches which are a distinct feature of Plato's style. Critical notes giving the most important varieties of text are found at the foot of each page. Points of Platonic forms and usages are discussed in the notes. Here the results do not always agree with those of Mr. Adam's late critical edition. The introduction consists of a very useful abstract of the argument, with luminous comments and explanatory matter, and there are valuable indexes. We cordially welcome the edition as sure to prove stimulating and enlightening to the higher forms in schools as well as to University students.

Edited Books.

Select Poems of Goldsmith. Edited by J. H. Lobban. 120 pp. (Blackwood.) 1s. 6d.—The selection of poems in this little volume is excellent for educational purposes, although it excludes some of Goldsmith's shorter poems and songs, and also the prologues and epilogues which in their own way are admirable poetry and are worth attention. Mr. Lobban's introduction is lengthy, but it is clear and masterly; and we agree with him when he records his conviction that Goldsmith's poetry can only be truly appreciated through a close study of his life and times; and that it is moreover the best introduction possible to the whole Johnsonian era in English literature. The notes are fine, and an appendix which includes the celebrated "Round Robin" adds distinction to this really valuable edition.

Lamb's Essays of Elia (2nd Series). Edited by N. L. Hallward and S. C. Hill. 342 pp. (Macmillan.) 2s. 6d.—This second series of Lamb's inimitable essays is admirably edited. The introduction, in addition to a condensed account of Lamb's life, is notable for some very penetrative remarks upon his character, and the discussion of the essay as a literary form is lucid and comprehensive. Absolutely entertaining is the last section which deals with Lamb's literary peculiarities and charm. The notes are fuller than usual, but the editors explain that this manual was primarily intended for Indian students, the result being a little over-elaborateness, but most excellent material notwithstanding. The index is also upon the same elaborate scale. A very valuable addition to this popular series of English classics.

The Junior Temple Reader. By Clara L. Thomson and E. E. Speight. 402 pp. (Horace Marshall.) 1s. 6d.—This volume carries on the deservedly high reputation which "The Temple Reader" was mainly instrumental in securing for the "New English Series." In compiling it, the same evident care and wide catholicity of taste is demonstrated, and the ability of its editors is as absolutely beyond question as is the unique view they take of the proper design of a reading book intended mainly to reach those who are educated in elementary schools. For these children the editors have gone to those heroic legends and fairy stories which impress every imagination; consequently we have the voyage of the Argonauts, as told first by Niebuhr and translated by Sarah Austin, side by side with the episode of Beowulf and Grendel, and the story of the death of Arthur not far from the legend "of Roland and his knights at Roncesvalles." Topelius, Hans Christian Andersen, and Grimm are also drawn upon for material; and Samuel Taylor Coleridge is found in the company of R. L. Stevenson and William Allingham; while Herrick is not many pages removed from Æsop. These names sufficiently indicate the broad lines upon which the editors have been travelling; and their past achievements in the same field are only equalled by their present well-merited success. The type is excellent, and a series of fifty-two very beautiful artistic reproductions and some original drawings add to the charm of this very pleasing volume. It deserves a great and a wide success.

Great Irishmen. 164 pp. (Bell.) 1s.—This collection of really well-written lives of a dozen of the great ornaments of Irish history is adapted for very young readers, but may possibly be found serviceable for those who are older. It includes the inevitable Saint Patrick, and the no less well-deserving Father Mathew. The lives of Goldsmith, Burke, and Sheridan, the "Iron Duke," and Daniel O'Connell are among those selected, and they are recounted in an admirable literary style adapted to their purpose. The illustrations are excellent.

The Evolution of the English Novel. By F. H. Stoddard. 235 pp. (Macmillan.) 6s.—Merely cursory critics and casual readers of Prof. Walter Raleigh's book on the English novel might have been inclined to doubt whether any other volume on the same topic could possibly be put into competition with that brilliant little work. But Prof. Stoddard, of the University of New York, in producing the volume before us has rendered a distinguished service to all lovers of the history of English literature, and in particular to those who are from any reason keenly alive to the charm and influence of the novel as a literary vehicle. In addition, the American professor has somewhat broken new ground by treating the novel from the standpoint of the evolutionist, whereas Prof. Raleigh (brilliantly enough) discusses it in its separate historical phases; and the later work must be allowed considerable weight on account of this speciality in its treatment, no less than on account of its literary merits. They do these things in America, it would seem, to a degree of perfection which even certain celebrated series of university manuals cannot quite surpass; and this volume, falling into line with the monographs now coming frequently enough from the active little University of Columbia, represents a line of literary study and critical production which one is bound to wish might be transferred to this side of the Atlantic. This volume of Professor Stoddard's can hardly be called a school-book, or even a text-book. It might be read with advantage by some teachers of the higher forms in schools; but its greatest benefit will be felt by the student of literature *qua* literature. The two chapters which deal with the growth of personality in fiction and the modern novel and its mission are especially suggestive; and the sections which discuss the historical, the romantic, and the novel of purpose, will be found to contain many hints and new points of view. Altogether, as a contribution to purely literary study, the volume should take high rank. Its lucid style, and the grasp of the subject which it displays, will prevent any reader from spending a tedious hour over it.

Grammar and Composition.

The Preparatory English Grammar. By W. Benson, B.A. (Bell.) 8d.—There is little in this small treatise that calls for extended notice, and we are of the opinion that the author has not made out a good case for himself in "adding to the existing multitude of English Grammars."

English Composition. By L. Cope Cornford. (Nutt.) 3s. 6d. Teachers will find this book very useful, especially in the higher forms. The essential factors of Composition—Invention, Selection, Disposition, Diction—are carefully explained and illustrated from the great English Classics, and the different points of view from which a subject may be approached are clearly shown. The author's remarks on style and diction are excellent.

History.

A Short History of the British Empire for the use of Junior Forms. By G. E. Green, M.A. xv. + 253 pp. (Dent.) 3s. 6d. Mr. Green seems to have attempted a book which should be worked through in the course of a single school year, and he has therefore felt a "great difficulty" in "determining what should be included and what excluded." He has also preferred to treat matters topically rather than adhere to strict chronological order. The result is a text-book which differs somewhat in proportion from the ordinary school text-book, and has certain interesting features, specially the chapters on industry and on literature. But we are afraid it will not commend itself to the ordinary teacher. It is, in our opinion, too difficult for the children for whom it is intended, and will require an unusually large amount of supplementary teaching. The only tables provided are genealogical, and the maps, though sufficient in number, do not look very helpful. But there are some sixty or seventy illustrations, nearly all of which seem to be quite new. Here and there the construction does not seem to maintain the level desirable in a school book, and certain forms of expression occur too frequently, *e.g.*, "so-called" and "tremendous." These can, however, be removed in a new edition.

Mathematics.

Chambers's Algebra for Schools. By W. Thomson, M.A., B.Sc., F.R.S.E. xvi. + 560 pp. (Chambers.) 4*s.* 6*d.*—There are encouraging signs of a gradual improvement in the teaching of elementary algebra in schools; one of these is the change in the complexion of current text-books. Thus in Prof. Thomson's work we find some attention paid to the elementary laws of operation—to such things as dimension, symmetry and algebraic form in general; there is even a chapter on graphics, and the method of detached coefficients is not concealed in an appendix. The aims of this book are so good that we wish it could be praised without reserve. Its worst defect is that complex quantities are practically ignored. For this there is no excuse, because the theory of quadratic forms compels us to consider the occurrence of complex quantities; and there is no real difficulty in making an elementary student familiar with the rules which complex quantities obey. He may not at first fully appreciate the logical justification of the rules, but neither does he fully understand the reason of the rule $(-a)(-b) = ab$. If a teacher insists upon dwelling on each particular point until his pupils appreciate (or seem to appreciate) it as fully as he does himself, he will waste much valuable time, besides violating a psychological principle. There are one or two other typical blemishes which it is worth while to specify, because they occur so often in elementary books and produce such an irritating crop of misapprehensions. In dealing with an infinite geometrical progression, Prof. Thomson says, "If r be a proper fraction, positive or negative, the absolute value of r^n becomes numerically smaller as n becomes greater. Hence, by taking n large enough, we can make r^n . . . . as small as we please." The word "hence" appears to imply a logical deduction, but in fact there is no argument at all, and this sort of thing invariably makes the average student infer that, if the terms of an infinite series continually diminish, they ultimately become indefinitely small, and the series is convergent. Again, take the proof of the remainder theorem. "Let Q be the quotient obtained by dividing an integral function of x, such as lx^2+mx+n, by $x-a$, and let R be the remainder, then $lx^2+mx+n = Q(x-a)+R$. Now R, by definition, does not contain x," etc. This is not absolutely wrong, but the words "by definition" have to be justified by a reference (not suggested) to a passage more than 400 pages back, and it would be much better to bring out the point independently. Finally, enough stress has not been laid on the fact that in ordinary algebra we *assume* that if $ab=0$, either $a=0$ or $b=0$. This is not a necessary consequence of the other laws of algebra, and unless we assume it, we cannot infer, for instance, that if $x^2=a^2$, then $x=a$ or $-a$; unless a is a number and x is assumed to be a number. The section on the binomial theorem for any exponent is a mistake; it would be much better to state the theorem with its proper limitations, and leave the proof for a later stage. However, when all is said, the book is in most respects a good one, and if used with discretion will be found convenient for class work.

First Stage Mechanics of Solids. By F. Rosenberg, M.A., B.Sc. viii. + 312 pp. (Clive.) 2*s.*—The third edition of a text-book for the Science and Art Examinations. It probably serves well enough the purpose for which it is intended, although the author is not a very lucid writer; for instance, "The property by which the molecules of one body can enter into the physical pores of another body is called porosity," "PMK is a semi-equilateral △," "The Perpendicular Triangle of Forces," and

Science and Technology.

Text-book of Zoology. By Dr. Otto Schmeil. Translated from the German by Rudolph Rosenstock, M.A., and edited by J. T. Cunningham, M.A. Part II. Birds, Reptiles, Fishes. vi. + 166 pp. (A. and C. Black.) 3*s.* 6*d.*—In reviewing the first part of Dr. Schmeil's "Text-book of Zoology," we referred to its general scope, and enumerated the chief characteristics of the method of treatment. The second instalment is of the same interesting nature as the previously published section, and the science master who gives object-lessons in junior forms will find here an abundance of material conveniently arranged. The illustrations are not quite so satisfactory as those of Part I., though in every case they will serve to make the text itself more easily understood. The complete work will form a very suitable addition to a school library, and is likely to become a popular book of reference among boys interested in natural history.

Elements of Mineralogy. By Frank F. Rutley. viii. + 240 pp. (Murby.) 2*s.*—Mr. Rutley's well-known little book on Mineralogy has reached its twelfth edition. The opportunity has been taken to insert a brief outline of the recently adopted treatment of crystal symmetry, as well as to add some new figures and to thoroughly revise the chemical formulæ. We have little doubt that the volume will enter upon a new lease of popularity. The amount of information crowded into the pages is simply astonishing.

Walks and Talks in the Zoo. Edited by Henry Scherren, F.Z.S. 88 pp. (Religious Tract Society.) 1*s.*—Mr. Scherren has made use of the old expedient of endowing the beasts he describes with the power of speech and setting them to tell their own stories to three young children who are visiting the Zoo with their auntie. We are of opinion that children will find the book interesting; we are sure the large life-like pictures of the animals will please them. The printing, too, calls for a word of commendation; the type is large and clear, and parents need have no apprehension that the sight of their little people will suffer by poring over this book. It will make an excellent present or prize for a boy or girl of eight or nine years of age.

Progressive Course of Chemistry for Junior Classes. By Telford Varley, M.A., B.Sc. viii. + 312 pp. (A. & C. Black.) 2*s.*—Though in no sense a strikingly original book, the volume provides a good, sensible course of elementary chemistry. The first fifty pages are taken up with an experimental introduction to those fundamental principles of physics without a knowledge of which no sound progress can be made in the study of chemistry. The method of treatment is a compromise between the "research" or "heuristic" method and the old-fashioned plan of telling the pupil everything. Considerable use is made of a plan of representing the constitution of gases graphically; it may be that in the hands of a discreet teacher such a system would prove helpful; but there is grave danger that a student may get weirdly erroneous ideas of the shapes of molecules and atoms. Mr. Varley follows the now usual plan of giving a summary and set of questions at the end of each chapter. The book is well illustrated and clearly printed. Though there cannot be said to have been any great need for a new elementary chemistry, we have no doubt that the book will succeed in obtaining readers.

Skertchly's Geology. By James Monckman, D.Sc. viii. + 259 pp. (Murby.) 2*s.*—It is little more than a year ago that we had the ninth edition of this popular primer before us, and now here is a tenth edition. The present is little more than a reprint of the edition noticed last year. The only difference seems to be the addition of some examination questions.

Miscellaneous.

Laudate: a Hymn and Tune-Book for Use in Secondary Day Schools. 122 pp. (Black.) 2*s.* 6*d.*—This compendium deserves to be very widely used. Welsh, French and German hymns are included in it, and some of the Psalms are, in whole or in part, introduced and set to well-known Anglican chants. The musical portion of the work is of genuine worth, and avoids triviality in every respect. When possible, hymns from foreign sources have been matched with tunes of the same parentage, and the harmonisation of them all is of a very solid, simple but musicianly kind. Perhaps Oliver Wendell Holmes's "Lord of all Being" deserves a better fate than to be set to the well-known but uninspired composition known as "Mainzer," and there is extant a much better tune to Charles Wesley's "O for a thousand tongues to sing" than the one here selected, but with these two exceptions the work is valuable. A two-part setting in tonic sol-fa accompanies each tune.

Freehand Drawing of Ornament. By John Carroll. (Burns & Oates.) 1*s.* 6*d.*- These examples (photographs) are very well chosen and clearly printed. The analytical sketches which accompany each example are useful and very good. One of the plates (No. 7) has rather too elaborate a construction given with it.

The Manipulation of the Brush as Applied to Design. By Stanley Thorogood, A.R.C.A. (Lond.) (Philip & Son.) - This volume consists of explanatory letterpress at the beginning followed by 48 plates of illustrations. The style of the book and its plates are excellent. The text explains the aim and object of brushwork, while plenty of examples of its proper use and value are given. All the remarks are sound, especially with regard to the sparing use of squared paper. The forms chosen from nature are particularly suitable to brushwork, and the application is simple, effective and sound. It is an admirable publication and should be in the hands of all teachers using the brush as a means of art education.

SENIOR CAMBRIDGE LOCAL EXAMINATION, DECEMBER, 1900.

Revision Test Papers.--No. 2.

THE following test papers cover the second half of the syllabuses, in the subjects selected for treatment, of the Senior Cambridge Local Examination of December next. The subjects in which questions are given are those offered by the largest number of candidates.

The first series of tests dealing with the former parts of the syllabuses was published in our September issue.

Copies of the papers in any of the subjects can be obtained in a form suitable for distribution in class. The reprinted papers are sold in packets of twenty-five at a cost of 6d. net for each subject. The papers may be ordered through a bookseller, or they may be obtained (post free) from the Editors of THE SCHOOL WORLD, but in the latter case all orders *must be prepaid.*

Teachers who require other test papers are recommended to refer to the list of papers, which are still available, enumerated in the advertisement pages of the present issue.

Arithmetic.

A.

(1) Find the value of $\frac{1}{7}$ of £1 0s. 5d. + $\frac{1}{5}$ of 17s. $2\frac{1}{4}$d. − $\frac{1}{8}$ of 10s. 10d.

Simplify:—

$$\frac{6\frac{7}{11} + 4\frac{3}{10}}{8\frac{2}{9} - 5\frac{5}{6}} \div \frac{3\frac{1}{3} + 8\frac{9}{11}}{5\frac{4}{9} - 4\frac{31}{81}}.$$

(2) Find, to four places of decimals, the value of

$(1{\cdot}341 + 2{\cdot}38 - 3{\cdot}402) \div {\cdot}0182.$

Express in tons, cwts., &c.,

1·3682 of a ton + 5·8125 of a cwt. + 8·232 of 1 lb.

(3) A baker supplies 72 kilogrammes of bread to a butcher in return for meat; the price of bread being 35 centimes per kilogramme, and that of meat 1 franc 20 centimes per kilogramme, how many kilogrammes of meat should he receive in return?

(4) Four times the width of a rectangular field is equal to three times its length; if a man, walking at the rate of $3\frac{1}{2}$ miles an hour, take $12\frac{1}{2}$ minutes to cross from one corner of the field to the opposite corner, how long will it take him to walk round the four sides of the field?

(5) A man bought 180 sheep at £1 6s. 3d. each, and, after paying 15 per cent. on his outlay for maintenance, exchanges them for 21 cows, which he then sold at £14 19s. each; what did he gain per cent. on his expenditure?

B.

(1) Allowing interest at 3 per cent. per annum, what sum of money will now discharge a debt of £614 17s. 10d. which becomes due 15 months hence?

(2) A founder contracts to supply Government with 1,250 brass castings at an average cost of 3s. 4d. each. He reckons that if 4 per cent. are condemned he will make 20 per cent. profit on his whole outlay. Owing to the use of an impure alloy in making a certain number of them, 30 per cent. fail to pass the required test. How much does he lose by the contract?

(3) A cyclist starting on a tour of 233 miles resolves to complete it in 7 days. On each of the first three days he rides $41\frac{2}{3}$ miles. For the next three days he daily increases the time devoted to riding in the proportion of 3 : 4, and daily diminishes his speed in the proportion of 5 : 3. What rate must he maintain on the last day of his tour if he completes the journey in 3 hours 20 minutes?

(4) Equal incomes are derived from the investment of £504 and £1,104 in two different stocks at 84 and 115 respectively; if the dividend of the former stock be 3 per cent. higher than that of the lower, find the total income from the two investments.

Answers.

A. (1) 5s; $\frac{2}{3}$. (2) 17·5274; 1 ton 13 cwt. 1 qr.
(3) 21 kilogrammes. (4) 35 minutes. (5) $15\frac{5}{8}$ per cent.

B. (1) £592 13s. 4d. (2) £20 16s. 8d. (3) 8 miles per hour.
(4) £96.

St. Luke.

(1) Can you support the statement that St. Luke was "an accomplished writer, a close observer, an unassuming historian, a well-instructed physician and a most faithful friend?"

(2) Draw a map to illustrate the travels of St. Luke.

(3) Say what you know about Theophilus.

(4) St. Luke's gospel has been described as pre-eminently "the gospel of pardon and pity." How do you understand this statement?

(5) Relate and discuss the parable of the Importunate Friend.

(6) Was the Last Supper an ordinary Passover?

In what respects does it seem to differ?

(7) Describe the actual working of the law of Divorce among the Jews and the teaching of Jesus about it.

(8) What were the chief sects of the Jews? and how is the hatred of the Jews for the Samaritans illustrated in this gospel?

(9) Translate and comment upon:—

(1) *ἦν ἀρχόμενος ὡσεὶ ἐτῶν τριάκοντα.*
(2) *οἶνον νέον εἰς ἀσκοὺς καινοὺς βλητέον.*
(3) *ἀλλ' οὐκ εὐθέως τὸ τέλος.*

(10) Translate the following passage with short notes:—

'Αναστάς δὲ ἀπὸ τῆς συναγωγῆς εἰσῆλθεν εἰς τὴν οἰκίαν Σίμωνος. πενθερὰ δὲ τοῦ Σίμωνος ἦν συνεχομένη πυρετῷ μεγάλῳ καὶ ἠρώτησαν αὐτὸν περὶ αὐτῆς. καὶ ἐπιστὰς ἐπάνω αὐτῆς ἐπετιμησεν τῷ πυρετῷ καὶ ἀφῆκεν αὐτήν· παραχρῆμα δέ ἀναστᾶσα διηκόνει αὐτοῖς·

English Grammar and Composition.

SYNTAX.

(1) Discuss the grammatical correctness of the following sentences:—

(*a*) Neither he nor they are confident about the trial.
(*b*) You are poorer than me.
(*c*) Ever so many passengers were killed.
(*d*) What do you think of my boat sailing to-day?

(2) Distinguish between the uses of the two Infinitives.

(3) Explain the terms Objective Complement, Retained Object, Prepositional Phrase, Indirect Question, Gerund.

(4) Enumerate the various uses of the prepositions *of* and *to*.

(5) Explain the idiomatic expressions—

(*a*) It came to pass.
(*b*) Methinks he is not well.
(*c*) So and so.
(*d*) Many a time.
(*e*) I intended to have spoken.

(6) What are the uses of *a* and *the*? Discuss their inclusion among the Adjectives.

(7) Give a short account of the "Subjunctive" Mood and its uses in modern English.

(8) For English Essay. (Time allowed, three-quarters of an hour).

(*a*) Esprit de Corps.
(*b*) Thomas Carlyle.
(*c*) "Mens sana in corpore sano."
(*d*) Conscription.

English History.

(1603-1688.)

Five *questions only to be attempted.*

(1) At the end of James I.'s reign a pamphleteer wrote, "*Great Britain* is of less account than was *little England* under Queen Elizabeth." Explain and comment upon this statement.

(2) Sketch the history of England *either* (*a*) during the period of Charles I.'s Personal Government, *or* (*b*) from Naseby to Worcester.

(3) Under what different forms of government did England pass between the death of Charles I. and the Restoration? Account for the failure of the Commonwealth.

(4) Show how the fear of Puritanism and of Roman Catholicism influenced the course of English history during the reign of Charles II.

(5) *Either* (*a*) illustrate the history of the Stuart Period from events which took place in the district where you live, *or* (*b*) sketch the growth of English colonies down to the Protestant Revolution.

(6) Describe the geographical position and illustrate the historical importance (during this period) of:—*Augsburg*, *Benburb*, *Drumclog*, *Madras*, *Maidstone*, *Newport*, *Nymwegen*, *Rhé*, *Tippermuir*, *Westphalia.*

Geography.

CANADA AND NEWFOUNDLAND; GENERAL.

(1) Draw a map of the Dominion of Canada. Insert the Laurentian river system, mark the positions of Montreal, Regina, Calgary, New Westminster; and draw the rivers Mackenzie, Athabasca, and Saskatchewan, and the Welland Canal.

(2) Describe the route of the Canadian Pacific Railway. Account for its importance for the world in general and the Dominion of Canada in particular.

(3) Give an account of the chief industries of Newfoundland. In what respects is Trinity Bay noteworthy?

(4) Describe the vegetation of Canada, with especial reference to Nova Scotia.

(5) Where and in what respects noteworthy are the following:—St. George, Yale, Halifax, Winnipeg, Fredericton, Chaudière Falls, the Dyke Lands, Algoma, Sudbury.

(6) Give an account of the navigation on the Laurentian lakes.

How is it that the river has not a delta?

(7) What are the conditions determining the amount of rainfall? Name (i) the most rainy, (ii) the rainless districts of the earth.

(8) Give a brief account of ocean currents. What effect would the blocking up of the Florida Strait have on the British Isles?

(9) Whence do we import tobacco, teak, esparto grass, wool, cork, copper?

(10) Construct a diagram to show the divergence of the Asiatic ranges of mountains from the Pamir plateau.

As You Like It.

(1) "One is apt to overlook Shakespeare's secondary characters." Discuss and illustrate this fully. Does the statement imply any fault in Shakespeare?

(2) Paraphrase carefully:—

Why, who cries out on pride,
That can therein tax any private party?
Doth it not flow as hugely as the sea,
Till that the weary very means do ebb?
What woman in the city do I name,
When that I say the city-woman bears
The cost of princes on unworthy shoulders?
Who can come in and say that I mean her,
When such a one as she is, such is her neighbour?
Or what is he of basest function,
That says his bravery is not on my cost,
Thinking that I mean him, but therein suits
His folly to the mettle of my speech?
There then; how then? what then? let me see wherein
My tongue hath wrong'd him; if it do him right,
Then he hath wrong'd himself; if he be free,
Why then my taxing like a wild-goose flies,
Unclaim'd of any man.

It is not the fashion to see the lady the epilogue; but it is no more unhandsome than to see the lord the prologue. If it be true that good wine needs no bush, 'tis true that a good play needs no epilogue: yet to good wine they do use good bushes, and good plays prove the better by the help of good epilogues. What a case am I in then, that am neither a good epilogue, nor cannot insinuate with you in the behalf of a good play!

(3) Give precisely the occasions of the following utterances, and explain how they show character:—

Men are April when they woo, December when they wed; maids are May when they are maids, but the sky changes when they are wives.

O Lord, Lord! it is a hard matter for friends to meet; but mountains may be removed with earthquakes and so encounter.

If ever you have looked on better days,
If ever been where bells have knolled to church,
If ever sat at any good man's feast . . .
Let gentleness my strong enforcement be.

If ever thou remember'st not the slightest folly
That ever love did make thee love into,
Thou hast not loved.

Hereafter, in a better world than this,
I shall desire more love and knowledge of you.

(4) Give the derivation and meaning of:—

An, atomy, eke, napkin, umber, virtue, stanzo, saw.

(5) Write a short sketch of the romance from which Shakespeare derived his plot, and note the principal variations and additions which he has made.

French.

(1) Compose short sentences illustrating the meaning of—*demi*, *moitié*, *tiers*, *centaine.*

(2) When does the French language use the present tense where the English language uses the perfect? Illustrate.

(3) Give the rules of agreement of the past participles of verbs conjugated with *être.* Write the third person plural of the present indicative and present conditional of—*acquérir*, *savoir*, *maudire*, *boire*.

(4) Distinguish between *autre* and *autrui*, *quelconque* and *quiconque*, *chaque* and *chacun*, *que* and *quoi*, with illustrative sentences.

(5) When is *si* followed (*a*) by a present or imperfect

indicative, and (*b*) by a future or a conditional? Give examples.

(6) Translate into English;

A quatre lieues de Blois, à une heure de la Loire, dans une petite vallée fort basse, entre des marais fangeux et un bois de grands chênes, loin de toutes les routes, on rencontre tout à coup un château royal, ou plutôt magique. On dirait que contraint par quelque lampe mystérieuse, un génie de l'Orient l'a enlevé pendant une des milles nuits, et l'a dérobé aux pays du soleil pour le cacher dans ceux du brouillard avec les amours d'un beau prince. Ce palais est enfoui comme un trésor; mais à ses dômes bleus, à ses élégants minarets, arrondis sur de larges murs ou élancés dans l'air, à ses longues terrasses qui dominent les bois . . . . . . on se croirait dans les royaumes de Bagdad si les murs noircis et la couleur mélancolique du ciel n'attestaient pas un pays pluvieux.

(7) Translate into French;

The late Sir Rose Price had the curious experience, during his trip through the Rocky Mountains, of catching a trout and cooking it while it was still at the end of his line. Sir Rose found a geyser so close to the stream where he was fishing that, when he happened to hook (*attraper*) a trout at that spot, he simply jerked (*faire sauter*) it out of the cold water into the hot, and it was eaten ten minutes afterwards.

(8) "Athalie."

(*a*) Translate Act 4, Scene III., ll. 4-10; Act 4, Scene VI., ll. 15-23; Act 5, Scene V., ll. 1-12.

(*b*) Write a plot of the first two Acts of the play, and quote any five or more consecutive lines.

(9) "Colomba." (References to Pitt Press Edition.)

(*a*) Translate p. 51, ll. 1-8; p. 75, ll. 5-13; p. 91, ll. 17-27.

(*b*) Explain *tira la langue de côté, à sa veillée, la minute du congé*.

Euclid.

(1) Any two sides of a triangle are together greater than the third side.

Find a point in a given straight line the sum of whose distances from two given points is the least possible.

(2) Construct a parallelogram equal to a given triangle and having an angle equal to a given angle.

(3) If a straight line be divided into any two parts the square on the whole line is equal to the sum of the squares on the two parts together with twice the rectangle contained by the two parts.

Divide a straight line into two parts so that the difference of the squares on the whole line and on one of the parts may be equal to five times the rectangle contained by the two parts.

(4) The angles in the same segment of a circle are equal.

ABCD is a square inscribed inside a circle and P is any point on the arc AB of the circumference; DP meets the tangent at A in E and BP meets CA produced in F; show that AE is equal to AF.

(5) If a straight line touch a circle, and from the point of contact a straight line be drawn cutting the circle, the angles which this line makes with the tangent are equal to the angles in the alternate segments of the circle.

Two circles touch externally at A and BAC in a straight line drawn through A to meet the circles in B and C; if BD and CE be parallel chords, one in each circle, show that DE passes through A.

(6) In a given circle inscribe a regular hexagon.

Describe a circle which shall cut the sides of an equilateral triangle in six points which shall be the angular points of a regular hexagon.

(7) Similar triangles are to one another in the duplicate ratio of their homologous sides.

ABCD is a quadrilateral and points E, F, G, H are taken in the sides AB, AD, CB, CD, so that AE equals $\frac{1}{3}$ AB, AF equals $\frac{1}{3}$ AD, CG equals $\frac{1}{3}$ CB, CH equals $\frac{1}{3}$ CD; then the parallelogram EFHG is equal to four-ninths of the quadrilateral.

(8) If a straight line be perpendicular to each of two intersecting straight lines at their point of intersection, it is perpendicular to the plane in which they are.

If a point be equidistant from the angular points of a square and not in the plane of the square, the straight line joining it with the intersection of the diagonals of the square is perpendicular to the plane of the square.

Algebra.

(1) Divide $(2x-3y+2z)^2-(x-3y+z)^2$ by $x-2y+z$; and find the L.C.M. of $a(a-1)x^2-x-a(a+1)$, $(a^2-2a)x^2-2x-(a^2-1)$, and $(a^2-3a+2)x^2-(2a^2-4a+1)x+a^2-a$.

(2) If x_1, x_2 are the roots of the equation, $x^2+px+q=0$, find in terms of p and q the value of $\frac{1}{(p+x_1)^2}+\frac{1}{(p+x_2)^2}$.

Form the equation whose roots are $x_1^2+x_2^2$ and $x_1^2-x_2^2$.

(3) If $\frac{a}{b}=\frac{c}{d}=\frac{e}{f}$ each of these ratios is equal to $\frac{a+c+e}{b+d+f}$.

If $\frac{3x+2y-z}{4c}=\frac{3y+2z-x}{4a}=\frac{3z+2x-y}{4b}$,

then $x(3a+3b-c)+y(a+b-c)=z(a+b-5c)$.

(4) Find the arithmetic, geometric and harmonic means of two positive quantities and show that the geometric mean is also the geometric mean of the arithmetic and harmonic means.

The arithmetic mean of two numbers is to the geometric mean as 13 is to 12, and the difference of their geometric and harmonic means is $\frac{6}{13}$; find the numbers.

(5) Solve the equations:—

(i.) $x^2-3xy=13$; $3xy-9y^2=-156$;

(ii.) $(x+2)^2+x+2\sqrt{x^2+5x+7}=0$;

(iii.) $x^3-9x^2+23x-15=0$, when one root exceeds another by 2.

(6) Find the number of combinations of n things taken r at a time; and show that this is the same as the number of them taken $n-r$ at a time.

In how many ways can 3 prizes be given to 30 boys, there being no restriction as to the number of prizes a boy may receive?

(7) Assuming the truth of the Binomial Theorem when the index is positive, prove it to be true when the index is negative.

Prove that

$$2+\frac{3.4}{1.2}\cdot\frac{1}{3^2}+\frac{4.5}{1.2}\cdot\frac{1}{3^3}+\frac{5.6}{1.2}\cdot\frac{1}{3^4}+\cdots=3\tfrac{3}{8}$$

(8) Prove that $\log_a b \cdot \log_b a=1$.

Find log 3 and log 7 having given that log 1029 = 3·0124154 and log 1323 = 3·1215598.

(9) An infinite series is convergent if from and after some fixed term the ratio of each term to the preceding term is numerically less than some quantity which is itself numerically less than unity.

Is the series whose n^{th} term is n^2x^{n-1} convergent or divergent?

Answers.

(1) $3(x+z)$; $[ax+(a+1)][(a-1)x-a][(a-2)x-(a-1)]$.

(2) $\frac{p^2-2q}{q^2}$; $x^2-(p^2-2q-p\sqrt{p^2-4q})x-p(p^2-2q)\sqrt{p^2-4q}=0$.

(4) 4, 9. (5) (i.) $x=\pm 1$, $y=\mp 4$; (ii.) -2 or -3; (iii.) 1, 3, 5. (6) 27,000. (8) log 3 = ·4771214, log 7 = ·8450980. (9) $x<1$, conv.; $x=$ or >1, div.

JUNIOR CAMBRIDGE LOCAL EXAMINATION, DECEMBER, 1900.

Revision Test Papers.—No. 2.

Two revision test papers in the ten most commonly offered subjects of the Junior Cambridge Local Examination in December, 1900, have been prepared for THE SCHOOL WORLD by teachers of experience. The second of these is here printed; the first appeared in our September number.

Copies of the papers in any of the subjects can be obtained in a form suitable for distribution in class. The reprinted papers are sold in packets of twenty-five at a cost of 6d. net for each subject. The papers may be ordered through a bookseller, or they may be obtained (post free) from the Editors of THE SCHOOL WORLD, but in the latter case all orders *must be prepaid*.

Teachers requiring other similar papers are referred to a list of those still available given in the advertisement pages of the present issue.

Arithmetic.

A.

(1) Find the Greatest Common Measure of the two numbers six thousand and one and ten thousand nine hundred and forty-three.

(2) Simply $(4\frac{3}{5} + 2\frac{6}{11}) \div (5\frac{3}{6} + 12\frac{15}{67})$.

(3) Find the cost of 6 tons 5 cwt. 50lbs. of sugar at £1 1s. per cwt.

(4) A five-franc piece is two-and-a-half millimetres thick; how many pieces must be placed, the one on the other, to make a pile one metre high?

What will be the value of the pile in pounds sterling if 25 francs equal £1?

(5) Divide the sum of 2·4508 and 1·448 by the difference between 5·4301 and 1·8201.

(6) Find the simple interest on £414 10s. for 1 year 8 months at $2\frac{3}{4}$ per cent. per annum.

B.

(1) Simplify:—

(i.) $3\cdot\dot{6}$ of $\cdot9\dot{5}\dot{4}$ of $\cdot\dot{4}2857\dot{1}$ of 9s. 3d.;

(ii.) $\dfrac{\frac{3}{10} - \frac{2}{5} \text{ of } \frac{1}{4}}{\frac{7}{8} + \frac{3}{5} \text{ of } 4\frac{4}{9} - (\frac{5}{9} \text{ of } 3\frac{1}{5} - \frac{1}{10})} \times (8\frac{7}{30} - 4\frac{1}{8})$.

(2) It is estimated that 8 cubic metres of air should be allowed to any one person for proper respiration; what is the length of a hall designed to hold 135 people if its height be 3 metres 75 centimetres and its width 8 metres 64 centimetres?

(3) A man bought a horse and cart for £42; if he sell the horse for £25, at what price must he sell the cart so as to gain 15 per cent. on his outlay?

(4) If money invested in 3 per cent. Consols give $2\frac{1}{2}$ per cent. after paying 10d. in the pound income tax, what is the price of Consols?

(5) A walks to a place at the rate of $4\frac{1}{2}$ miles an hour; at 8 miles from his destination he meets B and turns back with him (walking at B's rate) for a mile. If A is half an-hour late at his destination, what is B's rate, and at what rate should A have walked after parting with B so as to arrive at the proper time?

Answers.

A. (1) 353. (2) $\frac{50}{121}$. (3) £131 14s. $4\frac{1}{2}$d. (4) 400; £80.
(5) 1·08. (6) £18 19s. $11\frac{1}{2}$d.

B. (1) (i.) 13s. $10\frac{1}{2}$d.; (ii.) $\frac{4}{11}$. (2) $33\frac{1}{3}$ metres. (3) £23 6s.
(4) 115. (5) $3\frac{3}{5}$ miles per hour; 6 miles per hour.

St. Luke.

(1) Say what you know about the date and design and author of St. Luke's gospel?

(2) Describe the Temptation in the Wilderness?

(3) What miracles happened at Capernaum and at Jerusalem according to this gospel?

(4) Give some account of Herod the Great and his nearer relatives.

(5) What are the main features of the geography of Palestine, and how was it politically divided in the time of Jesus?

(6) Give a careful comparison of the Sermon on the Mount as recorded by St. Luke and St. Matthew.

(7) Explain the parable of the Vineyard, and describe the circumstances attending its recital.

(8) What do you understand by the following:—

(*a*) This man began to build, but was not able to finish.
(*b*) In your patience possess ye your souls.
(*c*) Ye know not what manner of spirit ye are of.
(*d*) He is not a God of the dead but of the living.

Acts of the Apostles.

(1) Relate the circumstances of Paul's first visit to Antioch, and give the main points of his great speech.

(2) How did Paul dissuade the people of Lystra from worshipping him?

(3) Why and when did Paul and Barnabas separate?

(4) What were the relations of the Jews of Thessalonica with Paul?

(5) Under what circumstances did Paul carry on his work in Corinth? What were the leading characteristics of that city?

(6) "The Jews and the Greeks dwelling at Ephesus." Describe the city of Ephesus as far as it comes into the narrative of the Acts of the Apostles, and say what kind of work St. Paul was able to do there.

(7) Draw a map showing the position of Pergamos, Athens, Thessalonica, Tarsus, Philadelphia, Beræa.

(8) Explain and give the context:—

(1) "The prince of life;" (2) "a lawful assembly;" (3) "desired favour against him;" (4) "could not see for the glory of that light;" (5) "a ringleader of the sect of the Nazarenes;" (6) "of that way."

English Grammar.

ANALYSIS AND COMPOSITION.

(1) Distinguish between a Phrase and a Clause. Classify the phrases in the passage given for analysis in Question 5.

(2) Explain the terms—*Indirect Object*, *Cognate Objective*, *Complement*, *Absolute Phrase*.

(3) Make a Complex sentence containing a Noun clause, an Adjective clause and an Adverbial clause. The Adjectival clause is to be dependent on some word in the Noun clause, and the Adverbial clause on some word in the Adjectival clause.

(4) Correct the following sentences and give your reasons for doing so:—

(*a*) He wants his hair cutting.
(*b*) Our casualties are less than I thought.
(*c*) Whom did he say spoke?
(*d*) He is one of those who never interferes with what they have not the control of.

(5) Analyse, in tabular form—

Adam, now ope thine eyes, and first behold
The effects which thy original crime hath wrought
In some to spring from thee, who never touched
The excepted tree, nor with the Snake conspired,
Nor sinned thy sin, yet from that sin derive
Corruption to bring forth more violent deeds.

(6) Give examples of the various sounds of *a* in our language; also those of *ch* and *ough*.

(7) Devote half an hour to the writing of an essay on one of the following subjects:—

Fire Brigades.
Lord Roberts.
"Little strokes fell great oaks."

As You Like It.

(1) How do you account for the sudden disappearance of Adam from the scene?

(2) Write short characters of Rosalind, Celia, Touchstone, Silvius and Phebe, and quote what you think their most characteristic speeches.

(3) Criticise the sudden conversion of Oliver.

(4) Give the derivation and meaning of:—

Villain, toy, reck, quip, sad, passion, nice, many, meed, fell, damask, counter, cope, censure, burden.

(5) Write a note on the use of "his" in Shakespearean English.

(6) What is a masque? Describe the one which occurs in this play, and mention any others, famous in literature, which you remember.

English History.

(1603-1688.)

Five *questions only to be attempted.*

(1) Set forth the reasons of the quarrel between *either* (*a*) Charles I. and the Long Parliament, *or* (*b*) the Long Parliament and the New Model.

(2) Tell the story of any notable Scotsman or Irishman who played a great part in English affairs during this period.

(3) Write a brief biography of Oliver Cromwell.

(4) Name the chief ministers of Charles II., and explain the circumstances under which each lost office.

(5) Mention any poem (contemporary, if possible) dealing with English history during this period. Quote some of the poem (not more than ten lines) and add an account of the episode which forms the subject of the poem.

(6) Write down in three columns:—(*a*) the subjoined place-

names; (*b*) the position of the places; (*c*) some event connected with them during this period.

Bothwell Brigg, Chalgrove, Cropredy, Dover, Dunkirk, Hull, Newbury, New Plymouth, Nottingham, Rathmines.

Geography.

Dominion of Canada and Newfoundland; General.

(1) Draw a map of the Dominion of Canada, and insert:—(i.) The provinces and their capitals; (ii.) The St. Lawrence; (iii.) The chief ports; (iv.) The Canadian Pacific Railway: (v.) The mountain ranges.

(2) What are the mineral resources of the Dominion? Name the chief steamship lines to England.

(3) Describe the surface of Newfoundland, and compare its climate with that of the Dominion.

(4) Where and for what noteworthy are Ottawa, Winnipeg, Fort York, Esquimalt, Toronto?

Account for the fogs off Newfoundland.

(5) Give an account of the wheat culture in Canada.

(6) What are the chief minerals of Wales?

(7) What are the principal products of Italy, India, Brazil, Sweden, New South Wales?

(8) Write a short account of tides.

(9) What are the chief factors in determining the climate of a country?

(10) Explain the terms—isothermal lines, zones of vegetation, steppes, antipodes, zenith.

French.

(1) Translate into English:

Pendant le bal, dans la foule, les assassins s'approchèrent de lui par derrière, du coté où il n'était pas accompagné, et il *reçut* un coup de pistolet dans le flanc gauche. Ils s'éloignèrent aussitôt. La salle fut *remplie* de fumée, et des cris répétés, "Au feu! au feu!" augmentèrent la confusion. Le roi, par un mouvement qu'il fit au moment où il fut frappé, avait dérangé le boulet qui devait le tuer sur la place. Il s'affaisa cependant sur le banc. Il ordonna aussitôt qu'on *fermât* toutes les portes. Neuf des conjurés étaient encore auprès de lui. Le roi, dans ce moment, montra un grand courage et une égale générosité; car ayant demandé si l'assassin était arrêté, et ayant appris qu'il ne l'était pas encore: "Dieu *veuille*," dit-il, "qu'on ne le trouve pas."

(2) Parse the words in italics in the above extract.

(3) Translate:—She gave it to him. Are they talking of it? They spoke of it to us. They have sent them to us.

(4) Give five nouns that have different meanings according to their gender; add the English.

(5) Write the third person plural of the present indicative, future, pluperfect indicative, and present subjunctive of—*aller, vivre, servir, se taire.*

(6) Translate into French:

Bonaparte's soldiers were permitted to jest with him. When he commanded in Italy, as he rode by a company of grenadiers, he saw among them a man of very small stature, and said to him: "You are very short for a grenadier." The soldier replied, "If generals were chosen by their height, you would not be one of them."

(7) "Colomba." (References to Pitt Press Edition.)

- (*a*) Translate—p. 52, ll. 18-24; p. 67, ll. 25-33; p. 105, ll. 7-14.
- (*b*) Explain—*un compte à regler, un crime de faux, à califourchon proscrit.*

(8) "Remi en Angleterre." (References to Pitt Press Edition.)

- (*a*) Translate—p. 43, ll. 1-12; p. 47, ll. 21-27; p. 66, ll. 18-28.
- (*b*) Explain—*Voir du pays*; *Combien étaient fondées*; *Que signifie?* and *Mais il n'en fut rien.*

Euclid.

(1) Define a right angle, parallel straight lines and a rhombus.

(2) The straight lines which join the ends of two equal and parallel straight lines, towards the same parts, are themselves equal and parallel.

(3) If the square on one side of a triangle be equal to the squares on the other two sides, the angle contained by these two sides is a right angle.

(4) Divide a straight line into two parts so that the rectangle contained by the whole and one part may be equal to the square on the other part.

(5) If two circles touch each other externally, the straight line joining their centres passes through the point of contact.

(6) In equal circles angles, either at the centres or at the circumferences, which stand on equal arcs, are equal.

(7) Inscribe a circle in a given triangle.

(8) If two triangles have their angles respectively equal they are similar, and those sides which are opposite the equal angles are homologous.

(9) AB, CD intersect at E, so that AE is equal to EC and BE to DE; then AC is parallel to BD.

(10) Describe an equilateral triangle having its vertex at a given point and its base lying along a given straight line.

(11) Show that any circle concentric with the inscribed circle of a triangle cuts off equal chords from its sides (produced if necessary).

Thence show that if the circumscribed and inscribed circles of a triangle be concentric the triangle is equilateral.

(12) O is the point of intersection of the perpendiculars of a triangle; if AD be produced to E so that DE equals DO, show that the circle circumscribing the triangle passes through E.

Algebra.

A.

(1) Prove that $ab=ba$ for all values of a and b.

Multiply together $x+a$, x^2+a^2, x^2-ax+a^2 and x^3-a^3.

(2) If $x=-3$, $y=4$, $z=3$, find the value of

$$\frac{2\sqrt[3]{(x^2+4y^2-z^2)}+\sqrt{(x^3+y^3+z^3-xyz)}}{x-y+3z}.$$

(3) Find the L.C.M. of $3x^2+10x-8$, $2x^2+3x-20$ and $6x^2-19x+10$.

Simplify:—

$$\left[\frac{2(a-b)^2}{3a(a+b)}\times\frac{3a^2}{5(a^4-b^4)}\right]\div\left[\frac{3a(a-b)}{5(a+b)^2}\times\frac{2(a^2-b^2)}{3(a^2+b^2)}\right]$$

(4) Solve the equations:—

(i.) $\frac{2}{5}(4x-5)+\frac{1-5x}{4}=x+\frac{1}{5}$.

(ii.) $2x-7y-3=5y-4x+9=5x-3y-3$;

(iii.) $\frac{4x-9}{5x-2}=\frac{6x-3}{7x+4}$.

(5) A cyclist rides 60 miles more in a fortnight than he did in the previous week, but his average daily ride for the fortnight was 2 miles less than it was for the week; how many miles has he ridden in the three weeks?

B.

(6) Explain the meaning of a^0 and a^{-m}.

Find the square root of $a+\frac{1}{a}+2\left(a^{\frac{1}{2}}-\frac{1}{a^{\frac{1}{2}}}\right)-1$.

(7) Solve the equations:—

(i.) $\sqrt{x-5}+\sqrt{x-12}=7$

(ii.) $3x+\frac{2}{y}=2,\ 2y+\frac{3}{x}=13$.

(8) Find the sum of n terms of a geometrical progression whose first term is unity and whose common ratio is r.

Sum the following series:—

(i.) $2\frac{1}{3}+3\frac{2}{3}+5+6\frac{1}{3}+\ldots$ to 12 terms;

(ii.) $3\frac{2}{3}+1\frac{2}{9}+\frac{11}{27}+\ldots$ to 6 terms and to infinity.

(9) If ${}_nC_r$ denote the number of combinations of n things r together prove that ${}_{n+1}C_r={}_nC_r+{}_nC_{r-1}$.

Find the number of ways in which a mixed hockey team containing 6 ladies and 5 gentlemen can be chosen from 10 ladies and 8 gentlemen.

(10) Find the general term in the expansion of $(1-2x)^{-2}$.

If $c_0, c_1, c_2 \ldots$ are the coefficients of corresponding powers of x in the expansion of $(1+x)^n$ find the value of $c_1+2c_2+3c_3+\ldots+nC_n$.

L. L.

Answers.
(1) $x^8+x^6a^2-x^2a^6-a^8$. (2) 9 (3) $(x+4)(2x-5)(3x-2)$; $-\frac{a}{a+b}$. (4) (i.) -3; (ii.) $x=0, y=-1$; (iii.) -3 or -7. (5) 236 miles. (6) $a^{\frac{1}{2}}+1-a^{-\frac{1}{2}}$. (7) (i.) 21; $x=\frac{1}{3}$ or $\frac{6}{13}$, $y=2$ or $\frac{13}{4}$. (8) (i.) 116; (ii.) $5\frac{359}{729}$; $5\frac{1}{2}$. (9) 11760. (10) $(r+1)2^rx^r$; $n2^{n-1}$

PRELIMINARY CAMBRIDGE LOCAL EXAMINATION, DECEMBER, 1900.

Revision Test Papers. No. 2.

Copies of the following papers can be obtained in a form suitable for distribution in class. Particulars as to price and how copies may be obtained will be found on p. 429.

Arithmetic.

(1) Multiply three hundred and two thousand six hundred and seventy-nine by five thousand and ninety-seven.

(2) Divide £170 6s. $10\frac{1}{2}$d. by 45 (by short division).

(3) Reduce 6 tons 13 cwt. 1 qr. 17lbs. to ounces.

(4) (i.) Find the continued product of $3\frac{2}{5}$, $1\frac{7}{8}$, $3\frac{13}{17}$.
(ii.) Divide the sum of $7\frac{2}{3}$ and $5\frac{1}{8}$ by $7\frac{5}{8}$.

(5) Subtract 7·93842 from 17·349, and divide ·010542 by 3·012.

(6) Find by Practice the value of 546 gross of pens at 13s. $5\frac{1}{2}$d. per gross.

(7) A contractor employs 25 workmen for three weeks; he pays 9 of them at the rate of 4 francs 75 centimes per day, and the rest 3 franc 25 centimes per day. What sum must he pay in all at the end of the three weeks? (A week = 6 days.)

(8) If it cost £9 5s. 4d. to carpet a room whose floor contains 278 square feet, how many square feet are there in one which can be carpeted for £12 4s. 8d.?

(9) What is the simple interest on £157 10s. for 3 years at $2\frac{3}{4}$ per cent. per annum?

(10) A rectangular cistern $10\frac{1}{2}$ feet long, $6\frac{1}{4}$ feet wide and 5 feet deep contains $262\frac{1}{2}$ cubic feet of water; what is the depth of the water?

(11) £3,500 is invested in $5\frac{1}{2}$ per cent. ordinary stock at 77; what is the income obtained?

If the stock be sold when the price has risen to $82\frac{1}{2}$, what will be gained by the transaction?

(12) At an election 48 per cent. of those entitled to vote voted for one candidate and 35 per cent. for the second candidate; 1,105 voters did not vote at all. How many votes did each candidate receive?

Answers.
(1) 1,542,754,863. (2) £3 15s. $8\frac{1}{2}$d. (3) 239056.
(4) (i.) 24; (ii.) $1\frac{124}{183}$. (5) 9·41058; ·0035. (6) £367 8s. 3d.
(7) 1705 fr. 50 c. (8) 367 sq. ft. (9) £12 19s. $10\frac{1}{2}$d.
(10) 4 ft. (11) £250; £250. (12) 3,120 and 2,275.

St. Luke.

(1) On what occasions did Jesus foretell his sufferings and death in the third year of his ministry?

(2) What were the leading events of the career of Jesus after he finally left Galilee?

(3) Draw a map to show the position of Cæsarea, Philippi, Bethsaida, Capernaum, Chorazin, Jericho, Bethlehem and Samaria.

(4) Explain the chief doctrines of the Pharisees and account for the denunciations of them uttered by Jesus.

(5) Relate in your own words the parable of the Prodigal Son, and point out the lessons it teaches.

(6) Which of the Seven Last Words are peculiar to the gospel of St. Luke?

(7) Explain the relations between the Jews and the Samaritans, and the reasons for the prophecy of the destruction of Jerusalem.

(8) Explain and give the context:—
(1) Strive to enter in at the strait gate.
(2) Let your loins be girded about.
(3) And when thou art converted strengthen thy brethren.
(4) Ye are as graves which appear not.

Exodus.

(1) Describe the call of Moses preparatory to the Giving of the Law.

(2) Who were Nadab, Abihu, Hur, and "his minister Joshua?"

(3) Relate the circumstances of Aaron's fall and death.

(4) What did the removing of the Tabernacle signify?

(5) "The first of the first fruit of thy land thou shalt bring into the house of the Lord thy God." Say what was implied by this command.

(6) What was the Lord's proclamation of his own character?

(7) Against what special sin were the Israelites warned? Why was the warning so emphatic?

(8) Who are stated to have seen the Lord? In what way did Moses show the solemnity of that interview?

(9) Explain, giving the context:—
"A land flowing with milk and honey."
"A stiff-necked people."
"Peradventure I shall make an atonement."

Grammar.

ACCIDENCE: COMPOSITION.

(1) What is meant by Inflexion? For what purposes are (i.) Adjectives, (ii.) Verbs inflected?

(2) Give the plurals of—chimney, chief, leech, ruby, scarf, and the masculine forms corresponding to—witch, duchess, niece, abbess, she.

What is the difference between Gender and Sex?

(3) Compare—good, beautiful, tender, hot, well, holy, nearly. What Adjectives cannot be compared?

(4) Give the first person plural, past tense, and the past participle of each of these verbs—fly, flow, flee, teach, awake, rise.

Give the present participle of—singe, offer, deny, note, be.

(5) How are adverbs classified?

(6) Define *Case*.

Explain the case of each noun and pronoun in the following passage:—"It is said that the frozen Norwegians, on the first sight of roses, dared not touch what they conceived were trees budding with fire."

(7) Composition. Passage for Reproduction.

The Wreck of the "Royal Charter," 1859 (*Episode*).

I went to bed at eleven, and lay there till I heard Captain Withers say to a lady, "I shall take your child: come directly." There was some answer to this, and Captain Withers said, "No, directly: there is no time to be lost." His voice had awakened me, and I jumped out of bed. I heard it was half-past two o'clock. I then felt the ship as if rubbing along the ground: and then there were three or four violent concussions. I immediately ran up into the upper saloon. I found ladies and gentlemen in the greatest state of consternation.. Mr Hodge, the clergyman, was there; and they all prayed together. I went up to look for my nurse and child. The saloon was so crammed that there was no chance of my being able to find my child there. I eventually found them. The bumping of the vessel continued, and increased in rapidity and violence; and water began to come in in all directions, so that I was perfectly wet through for hours before I left the ship. I do not know what hour it was when I jumped overboard; but the man who saved me told me it was half-past seven. I was on deck when the vessel split. I was knocked down by the waves; and I saw Captain Taylor lying on the deck, where he had been knocked down by a wave. He had a rope round his waist, and a log tied to the end of it. I said, "O Captain Taylor, what a fearful scene this is!" He did not reply. Another wave came in on me. I flung off my great-coat, and jumped overboard. I got hold of a log of wood, but was washed off it twice. I was washed to the rock, and grasped the weed, but was twice washed away with weed in my hands. I was carried in a third time, and two or three men caught me by the points of the fingers, and prevented me from being carried out again. A man, named Robert Lewis, had me carried to his house, where I was treated with the greatest kindness by him and his wife. My little daughter and also her nurse were lost.

Marmion.

(1) Give the substance of "De Wilton's History."
(2) Explain fully the allusions in:—

Terouenne,
Where England's king in leaguer lay.

O, Douglas, for thy leading wand!
Fierce Randolph, for thy speed!

Brian Tunstall, stainless knight.

'Twas levelled when fanatic Brook
The fair cathedral storm'd and took.

More, Sands, and Denny, pass'd the joke.

Red De Clare, stout Gloster's Earl.

(3) Who were:—St. Chad, St. Thomas of Canterbury, Harry Hotspur, Gawain Douglas, Dacre, Stanley?

(4) What do you know of:—St. Fillan's blessed well, Tantallon, Tamworth, Twisel Bridge, Dunkeld, Whitby, Raby, Norham?

(5) Give the meaning of:—bastion, basnet, portcullis, blazoned, scallop shell, bartizan, gouts, targe, runnel, broach, scutcheon, aves.

English History.

(1603-1688.)

Five *questions only to be attempted.*

(1) Tell the story of *either* (*a*) The Bishops' Wars *or* (*b*) Monmouth's Insurrection.

(2) Write a life of *either* Ralegh *or* Blake *or* Prince Rupert.

(3) Explain why quarrels between King and Parliament arose in the reign of *either* (*a*) James I. *or* (*b*) Charles II.

(4) Give an account of the circumstances which led to *either* (*a*) the execution of Charles I. *or* (*b*) the deposition of James II.

(5) Over what territories did Charles II. bear rule which are not included among the dominions of Queen Victoria? Which of the Stuart Kings of England were ancestors of the Queen?

(6) Where are the following places, and with what events are they associated during this period?—*Bombay*, *Drogheda*, *Dunbar*, *Gloucester*, *Naseby*, *New York*, *Philiphaugh*, *Rochelle*, *Sedgemoor*, *Worcester*.

Geography.

GREAT BRITAIN.

(1) On a map of England and Wales insert—The Downs, Plynlimmon, St. Bees Head, The Needles, Rivers Severn and Nen, Liverpool, York, Bedford, Hull, Plymouth, Birmingham, Carlisle, Taunton.

(2) Name a tributary of each of these rivers—Thames, Yorkshire Ouse, Trent, Severn; and a town in Essex, Lanark, Sutherland, Westmoreland.

(3) Mention one place in Great Britain famous for the making of (*a*) cotton, (*b*) woollen goods, (*c*) lace, (*d*) needles, (*e*) straw hats, (*f*) razors, (*g*) pens.

In what counties are most sheep found?

(4) Where are the following, and for what are they noted—Cardiff, Leeds, Aberdeen, Reading, Crewe?

(5) Name the counties of Wales that are maritime.

(6) Which are the chief fishing ports in Great Britain?

(7) What railways connect London with (1) York, (2) Harwich, (3) Exeter, (4) Bradford?

(8) Give a short account of (*a*) The Lake District of England, or (*b*) The New Forest, or (*c*) The Fen District.

French.

(1) Give the feminine of—*Sec*, *cruel*, *faux*, *doux*, *fou*; and the masculine of—*femme*, *sœur*, *ânesse*, *publique*, *enchanteresse*.

(2) Turn into French:

(*a*) This French lady's blue dresses are beautiful; (*b*) His son's horse is black; (*c*) The largest of those books is mine.

(3) Give in words the French for:

I am twelve and a half years old. The 27th of July. Number 91. Page 80. James I. James IV. A quarter. Two-thirds. The year 1900.

(4) Write the first person singular of the present and future indicative of—*avoir*, *être*, *quitter*, and *finir*. What is the French for—They are having; I have been; We were leaving; Have you finished?

(5) Write in full the imperfect indicative of *dire* and *voir*.

(6) Translate into English:

Petit Fritz! Pourquoi as-tu quitté l'Alsace, le joli pays où tu *es* né, la maison de ton père, au toit (*roof*) de chaume (thatch), au jardinet fleuri? . . . .

Parce qu'ils ont *pris* l'Alsace! parce qu'ils ont tué grandpère et grand'mère! parce que papa est en prison à Strasbourg et que maman est *morte* de douleur.

Je suis orphelin et seul au monde! *Je vais* en France: les Français sont *bons*. J'irai à Paris trouver leur chef et je lui dirai: je suis un pauvre petit Alsacien sans un sou et j'ai faim, secourez-moi.

(7) Parse the words in italics in Question 6.

(8) Translate into French:

Where have you spent (*passer*) the holidays? I went first into the country and saw the green fields and the beautiful trees. Sometimes I went for a drive in the carriage, but I much preferred riding on horseback. After a fortnight father took us to the seaside.

(9) "Remi en Angleterre." (References to Pitt Press Edition.)

(*a*) Translate—

p. 46, ll. 15-21; p. 50, ll. 21-28; p. 53, ll. 14-23.

(*b*) Explain:

De chez nous; ne sont plus de ce monde; à la nuit tombante; assez causé.

Euclid.

Part I.

(1) Define the various classes of triangles according to (i.) their sides, (ii.) their angles. Draw figures to illustrate your answer.

(2) If two triangles have two sides of the one equal to two sides of the other, each to each, and have also the angles contained by those sides equal, then shall the triangles be equal in all respects.

(3) If one side of a triangle be produced, then the exterior angle shall be greater than either of the interior opposite angles.

The perpendicular is the shortest straight line that can be drawn to a given straight line from a given point outside it.

(4) If a straight line fall on two parallel straight lines, then it shall make the alternate angles equal to one another, and also the two interior angles on the same side together equal to two right angles.

A quadrilateral which has two opposite sides parallel and two opposite angles equal is a parallelogram.

(5) Triangles on the same base, and between the same parallels, are equal in area.

(6) Describe a parallelogram equal to a given triangle and having one of its angles equal to a given angle.

Part II.

(7) ABC is an isosceles triangle having AB equal to AC; if BE and CF be the perpendiculars from the angular points on the opposite sides, then FE is parallel to BC.

(8) If a straight line be divided into any two parts, the square on the whole line is equal to the sum of the squares on the two parts together with twice the rectangle contained by the two parts.

(9) Describe a square equal to a given rectangle.

Algebra.

PART I.

(1) Add together $3-4x+x^2$, $x-2x^2$, $3-5x$, $3x^2+7x-5$.
Simplify $\{3a-(2b+4c)+(4a-2b+4c)\}$
$-\{(3c+a)-(2a+4b-c)+5c\}$.

(2) Multiply x^3-x-3 by x^2-3x+2.
Divide $a^6-a^5b+a^4b^2-ab^5+b^6$ by $a^4-a^2b^2+b^4$.

(3) Express by means of algebraic symbols: the product of a and b divided by the difference of the squares of $a+2b$ and $3b$.

(4) Simplify:—

$$\text{(i.)}\quad \frac{2}{x-3}+\frac{3}{2x-4}-\frac{3x-7}{(x-2)(x-3)};$$

(ii.) $\frac{2ab}{a^2+ab} \times \frac{+bc}{ab-b^2} \quad \frac{2c^2}{ac-bc}$.

(5) Solve the equations:—

(i.) $(x-2)(x-3)+(x-1)(x-4)=2(x-3)^2$;

(ii.) $\frac{x}{3}+\frac{y}{4}=17$, $\frac{x}{4}+\frac{y}{3}=18$.

(6) A sum of money was divided between A, B and C; B's share was seven-eighths of C's share, and A's share is as much as B's and C's shares together; also 14s. less than A's share is equal to 14s. more than C's share. What was the sum of money and how was it divided?

PART II.

(7) Find the highest common factor and the lowest common multiple of x^2-5x+6, x^2-4x+4 and $2x^2-5x+2$.

(8) Solve the equations:

(i.) $\frac{x+2y}{a+b}+\frac{2x+y}{a-b}=2$.
$3(x+y)=2a$.

(ii.) $(x-2)^2-4(x-2)+3=0$.

(9) A grocer gains 3s. by selling a mixture of 6 lbs. of one kind of tea with 2 lbs. of a better kind at 1s. 9d. a pound; if he had sold a mixture of 6 lbs. of the better kind with 2 lbs. of the inferior at the same price he would have lost 4d. What is the price per pound of each tea?

(10) Find the sum of:—

(i.) the progression 2, $2\frac{3}{4}$, $3\frac{1}{2}$, $4\frac{1}{4}$, 5 . . . to 20 terms;

(ii.) seven terms of the geometrical progression whose first and second terms are 3 and $1\frac{1}{2}$?

Answers.

(1) $2x^2-x+1$; $8a-9c$. (2) $x^5-3x^4+x^3+7x-6$; a^2-ab+b^2.

(3) $\frac{ab}{(a+2b)^2-9b^2}$. (4) (i.) $\frac{1}{2(x-2)}$; (ii.) 1.

(5) (i.) 4; (ii.) $x=24$; $y=36$. (6) £6; A, £3, B, £1 8s., C, £1 12s. (7) H.C.F., $(x-2)$; L.C.M., $(x-2)^2(x-3)(2x-1)$.

(8) (i.) $x=\frac{a-3b}{3}$, $y=\frac{a+3b}{3}$; (ii.) 3 or 5.

(9) 1s. 2d. and 2s. (10) (i.) $182\frac{1}{2}$; (ii.) $5\frac{61}{64}$.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

International Correspondence.

I AM pleased to be able to testify to the practical value, in connection with the teaching of languages, of the International Correspondence advocated by Mr. Neville Ross in your October issue.

Mr. Ross speaks of the superiority of French and German boys as linguists. This is undeniable. It is, however, due, I believe, not so much to the difference of method employed as to the very different attitude of mind in which the boys receive instruction. I remember very well the earnest tone which prevailed in the schools in France which I attended as a boy. The French boy, to speak roundly, *believes in* his English lesson, while the English boy, on the contrary, is imbued with the idea that French is one of those many incomprehensible things whereof the gods have made whips to scourge him. This idea is perhaps in great measure due to the slighting remarks which English children hear at home. The Englishman, as contrasted with the German, has hitherto been an unbeliever in respect to school education, and his children are at best apathetic in regard to languages.

Hence the immense indirect value of such a stimulus as individual correspondence. Having given it a considerable trial, I can affirm that it greatly increases the interest in French as a class subject. I had about sixty boys belonging to various available classes, and of these twenty voluntarily asked for French correspondents; and the list was made up from term to term. Curiosity may have been partly the motive; but inasmuch as this curiosity could be satisfied only through knowledge, its educational value will be admitted. Our correspondents would tell us many facts of personal and general interest—the arrangements of their schools, the mode of their daily life, their hours and lessons—which not only involved new vocabulary, but gave familiar words a real value. Then the attempts of the French boys to express themselves in English, though not always entirely successful, yet would often throw a sudden light on French idiom. Foreign turns of phrase done literally into English are capable of notoriously comic effects: the class often laughed heartily. So much was mere amusement, but—there was the teacher's opportunity to rub in the rule.

Again, I found that it sent my pupils with new interest back to their grammars. The fear of being ridiculous in the eyes of a *cher camarade* caused many a search. Genders, concords, and other erstwhile abominations of the French lesson, suddenly become important to the boy who is trying to express himself intelligently and normally.

I am glad also to be able to endorse Mr. Ross's remarks on the needlessness of the fear which is sometimes expressed that boys' morals may suffer from intercourse with Frenchmen. Not only is the implied reproach quite undeserved by the French schoolboy, who is more carefully supervised both at home and at school than the ordinary English boy of the same age, but the facts will be found to be against it. To be quite candid, I do remember one case of a drawing or cutting of an undesirable kind being sent enclosed with a letter to one of my pupils, but from the regularity with which the letters were shown to me I am sure that this was an exception. And are our own schools so pure that we can throw a stone here? In almost all cases, moreover, the French boys' letters showed them to be desirable companions, and, as might be expected, of quite the most intelligent and industrious class of schoolboy.

The aggregate information which the letters brought was not the least of the benefits derived. We had glimpses of schoolboy life in the valleys of the Ardennes and on the slopes of the Pyrenees, in Paris or Lyons, and in the most remote villages. Frequently views and magazines were exchanged. Books would be recommended. Here again the matter chosen was so like our own in moral quality that it is quite amusing to hear anxious enquiries about "pernicious literature" and "immoral ideas." The truth is, an English boy and a French boy are very much alike. "*La terre*" is not the typical mental pabulum of the French youth, nor is the name of Guy de Maupassant a household word in France.

Speaking generally, I should say that the French boys were more advanced in school work than our own, and better informed in general knowledge. They expressed themselves, too, much better; and some of their letters in English were surprisingly well written. All this had an influence in the right direction upon our own boys.

Apart from the advantages to be expected from a pedagogic point of view, the cultivation of sympathy, and the encouragement of cosmopolitan feelings *versus* insularity, must make a general system of International Correspondence a desideratum in the eyes of every true educationist.

To the man of purely commercial sympathies, it may be recommended as giving a boy a better acquaintance with the forms of *epistolary* French than ever can be gained from exercises and literature alone.

F. W. G. FOAT.

City of London School, E.C.

[This subject is referred to on p. 418. —EDS. S. W.]

Measurements of Pupils in Schools.

I AM at present engaged on an investigation into the strength of collateral heredity, *i.e.*, the degree of resemblance for a variety of mental and physical characters of pairs of brothers, pairs of sisters, and pairs of brothers and sisters. In this matter I cannot seek the aid of parents, for they are scarcely unbiased observers, but I have to appeal for aid to those who teach in schools, and have thus an independent and often extensive knowledge of their pupils' characters. This is very frequently combined with the scientific training and caution which renders the teacher's aid of special value. As it is necessary to obtain measurements and observations of both sexes, I have appealed to both men and women teachers, and as it is also needful to combine the sexes (in the brother-sister measurements) to those working in elementary schools, as well as in boys' public schools and in girls' high schools.

The result of my appeal has been to bring me a great deal of most valuable aid. Several high schools have been dealt with, six of our chief public schools have been, or are being measured, and a considerable variety of private, elementary and other schools. But a single public school (even of 500 to 700 boys) will often have only ten to twenty pairs of brethren, not, perhaps, as many as in a village national school, and I am most desirous of getting further help. The determination of the strength of collateral heredity is a problem of great scientific importance, and it can only be achieved by co-operative action.

I have found so many teachers in all classes of schools willing to give disinterested aid in the cause of science that I venture to make a further appeal through THE SCHOOL WORLD for more assistance. Besides observations of physical and mental characters, which can be recorded without measurement, my data papers ask for certain head-measurements, which can, following the printed instructions, be taken quite easily. I shall be most glad to send sample papers to anyone willing to assist, and if, after considering these, they find themselves able to assist, say by filling in data papers for ten or more pairs of brothers or sisters, I will at once despatch a head-spanner, of which I have several at the present time, free. The head-spanner should not be retained (unless in special circumstances) for more than a month. Where the school is a small one, one master has, as a rule, filled in the papers entirely; in larger schools, one of the science masters, or even the medical officer, has done the head-measurements, and the other data have been provided by house, form or consulting masters.

In the ultimate publication of the statistics all aid will be duly acknowledged, but I make the appeal for help simply on the ground that the investigation of heredity is to-day one of the most important scientific problems, and that its exact quantitative determination is well within the reach of co-operative observation.

KARL PEARSON.

University College, London.

The Heuristic Method of Teaching Science.

THE question of the practicability of the heuristic method is one which almost every teacher of elementary science has considered at one time or another. Judged *a priori*, *i.e.*, without any reference to experience, the superiority of this method of teaching is, I believe, generally admitted, even by its opponents. "Where it fails," they say, "is in the execution." Success or failure appears to me to depend very much upon the nature and nurture of the teacher, and not less upon the conditions under which he has to work. As regards the former, it may be said that in general the personality of the teacher is a more important factor than the system he adopts, provided it be not absolutely bad, and that consequently it often happens that a good teacher working on an inferior method will obtain better results than an inferior teacher acting upon a good one. A science master who has been brought up on the old system, and who has based his teaching upon it for years, will invariably encounter more obstacles in his path than his younger colleague who became acquainted with the more recent system while yet a student, and who has no sacrifice to make in saying farewell to an old and trusted hand-maid who has rendered good service in the past. There is, no doubt, many a teacher who has started the innovation with a strong bias, and if success have not attended his efforts after the first year, he has been only too ready to drop it again. One year's work is, of course, far too little for a man to base any conclusion upon, especially if the idea and the work be entirely new to him, and it is obvious that he who has taught successfully on the old lines for a number of years cannot expect his results to be as good a year, or even two years, after executing his *volte-face* as they were before.

No doubt a great stumbling-block is to be found in the greater length of time and in the increased amount of attention on the part of the teacher the heuristic method requires. To carry it out in a strictly logical manner, much longer time and much smaller classes are needed than a headmaster is usually prepared to give. Nevertheless a great deal can be done even under ordinary conditions. As my experience goes, with three periods of 50 minutes each per week, of which two (consecutive) are devoted to practical work, and with a class not numbering more than twenty-five, the contents of the chemical portion of the Elementary Science syllabus of the Central Welsh Board (1900) can be satisfactorily taught in a school year, and that including a revision and examination every fifth week.

One of the mistakes most frequently made by opponents, including your correspondent "S. K.," is to suppose that, as the essence of the new method is "to find out for yourself," so *every* fact must be discovered by the pupil. This is, of course, quite impossible, and, moreover, quite unnecessary. A certain amount of information must be imparted, but this does not preclude the possibility of the main facts being found out by the pupils themselves under the guidance of the teacher. Nor is the method invalidated thereby. Chemistry is pre-eminently an inductive science, and it does not lose its claim to that title because the chemist occasionally employs the deductive method, and that often with great success. However unfavourable the conditions of working may be, it is always possible to reduce the amount of imparted instruction to a minimum. Further, from time to time it will be necessary for the teacher alone to perform some of the more difficult experiments before the class, such experiments to have been suggested by the pupils, if possible.

Your correspondent further says that "the method breaks down as soon as the stage is reached at which an acquaintance with the classical experiments becomes necessary." This has not been my experience. It is evidently implied in the above statement that the classical experiments are, as a rule, difficult, or they involve the use of expensive or elaborate apparatus. So far as my knowledge goes, the majority of the classical experiments are entirely the reverse of being difficult or elaborate—the masterpieces are conspicuous by their simplicity. Again, if such an experiment be of a difficult character, it is by no means essential that that particular experiment be performed if the same result can be arrived at by a simpler, if not a classical, one. To take a concrete case. Lavoisier's experiments on the isolation of oxygen from the air by means of mercury were of epoch-marking importance, at the same time their execution in a school laboratory would not be practicable. Yet the isolation can be accomplished quite as effectively and much more simply with the metal lead. And, as above mentioned, if the teacher have to perform an experiment alone before the class as occasion may require, it cannot be maintained that the method as a whole breaks down.

For boys beginning chemistry at the age of 12 or 13, I have found that three or four terms devoted entirely to the art of discovery are sufficient. After that time they are gradually led on to the laws of chemical combination, the Atomic Theory, symbols, formulæ, &c., and so on till the main theoretical principles of the science have been discussed; this is then followed by a systematic study of the important non-metallic and metallic elements. During this time they are constantly presented with practical problems which necessitate the exercise of the reasoning faculty. One of the greatest drawbacks of the old method to me is that it is necessary to introduce the fundamental Atomic and Molecular Theories at a stage long before the pupil is in a position to understand them. It is, of course, possible to slur over this most important part of the subject in a first year's course—and this is usually done—and to teach the use of symbols, &c., before their meaning can be adequately grasped; this, however, is unsatisfactory both as regards method and results. A great advantage possessed by the research method is that it enables one to bring the subject-matter before the learner in a strictly logical manner. In investigating "chalk," for example, experiments lasting over weeks can be performed, each of which is directly connected with those that precede and with those that follow it. To sum up: from a practical point of view, the heuristic method is not only as feasible as, but is distinctly superior to, the older method. This superiority, however, is greatly diminished if the conditions as to time and size of class be unfavourable.

From the theoretical standpoint the advantages of the research method are too obvious to need description. Once we admit that it is of more importance in education to develop the reasoning faculty than to convert the mind into a compendium of facts, then the question is answered. Chemistry is a science which embraces a colossal number of facts, and most of those learnt at school will be of comparatively little importance to the average pupil in after life. He will soon forget the details as to the preparation and properties of gases, the tests for bismuth and the amount of argon in the atmosphere, but once get him into the habit of posing himself questions and of concentrating his whole attention upon their solution, then the gain to him of having followed a course in scientific method will be incalculable. The practice of this method, too, is capable of instilling a wholesome moral lesson. The difficulties the pupil encounters in the solution of scientific problems are not dissimilar to the difficulties he will have to contend with in life itself. At every step he will stand face to face with problems which demand for their solution the concentration of all his powers; his efforts will be frequently futile, but by dint of dogged perseverance and the exercise of a little ingenuity he will find that, as a rule, the difficulties are ultimately overcome and the fight brought to a successful issue. If the issue be not successful, then, to slightly alter the poet's words, "better to have tried and failed than never to have tried at all."

E. Howard Tripp.

The letters on science teaching in last month's School World were very interesting reading to one engaged in the work. Mr. Picton calls attention to the would-be heuristic teacher who is disappointed at not getting "results." To one who has tried both methods of teaching, while at the same time keeping an eye on a "syllabus," the disappointment may be very serious. As to the greater interest shown by pupils when introduced to a subject in the "discovery" manner, there can be no doubt, and this is a very old experience in teaching. For this reason, I think, a class-lesson with lecture experiments may be made of quite as much value as a working period in a laboratory. Judicious questions before beginning an experiment, as to the way of attacking a problem, have frequently brought out very clearly the ability of at least some members of a class to suggest methods which can then be immediately tried. As an example, what may be called a J-tube containing a small quantity of quicksilver is placed in a deep jar of water, then, both limbs being open, and the longer one reaching above the level of the water, a class used to heuristic methods immediately begin to suggest explanations and extensions of the experiment, and being questioned are able to correctly prophecy results in the demonstration of which they take the keenest interest. Thus placing the same tube in a similar depth of another liquid, I have had the immediate suggestion that here is a method for finding relative densities.

Now if the boys are working alone or even in pairs at this experiment, some are quickly left behind, and the class loses the advantages which arise from mutual help.

Some of your correspondents have called attention to the necessity of great accuracy in the quantitative experiments. This is difficult to obtain in the whole of a class, so a compromise has to be made, and it is given out that if all had done their work very well the results would have agreed. Yet it seems to me questionable whether the boys individually are really convinced of the invariable proportion of, say, water of crystallisation in a substance: such conviction only comes after long experience of what it means to have a "pure" substance. Mr. Robjohns calls attention to perhaps the most valuable part of the method in its demand for care, and this is the great point of laboratory work. On the other hand, Mr. Hadley points out the rarity of finding elementary students who can attain the necessary accuracy for real proof of any law. This would seem to indicate the advisability of keeping to qualitative experiments in chemistry and in most branches of physics. My own experience agrees with this. At the same time, with good balances and good quality cardboard, it is quite easy to demonstrate the accuracy of the ordinary mensuration rules. After a course of this kind it appears to me quite reasonable to tell the pupil that his rough numbers, obtained, say, in experiments on Boyle's Law, point to a truth proved by the results of Boyle and his successors, the actual figures obtained by these being shown him.

The impression left on one's mind after reading all the letters on this subject seems to be that it is advisable, even if not necessary, to make a compromise between the two methods, trying to get the best out of each.

G. H. Wyatt.

Emanuel School,
Wandsworth Common,
October 10th, 1900.

School Workshops for Poor Children in Sweden.

The following particulars of a system of school workshops which has been established in Sweden, I have extracted from a communication from a friend in Stockholm. It may perhaps be of interest to your readers, particularly so as good results have followed its adoption.

In 1886, a Society was founded in Sweden by private enterprise for two purposes: first, to take care of the children of the very poor, and of those who, occupied during the day in factories or elsewhere, were unable, however willing, to give their children proper surveillance; and secondly, to inspire children at an early age with a love of work, to teach manual dexterity in the use of simple tools and to give them an insight into some trade, which later in life they might follow with a chance of success. From the above operations a third result flows, that the children are preserved from the temptations of the street and from the danger of becoming little mendicants during "out-of-school" hours.

The age of the pupils in the children's workshops is from 7 to 14 years. They are selected from the scholars at the primary schools. The schoolmasters select those children who are neglected by their parents, or whose parents are too poor to give them proper attention.

In Stockholm alone there are twelve of these children's workshops, whose pupils number about 1,500, varying from 60 in the smaller workshops to 200 in the larger. The smaller children, aged between 7 and 10 years, work from 11 a.m. to 1 p.m., and then have dinner. The elder children, from 10 to 14 years, work between the hours of 5 and 7 p.m. three times a week, and are then provided with supper. A certain proportion of the children remain in the workshops from one o'clock to half-past seven. These first of all have dinner, then discharge the duties of their respective tasks and finish with supper.

The workshops are managed free of cost by women of leisure, but there are also paid women teachers and artisan instructors. Despite the expenses in connection with these instructors, and for materials and upkeep of the schools, for lighting, heating, and for food for the children, the average cost per child per annum is only about fourteen shillings. Some of the children take their work home with them, and whatever they do at home they are paid for, the value being entered in a savings book. This last idea is one of the best in connection with the system, as it inculcates in the children both the love of thrift and of method, and they are proud and happy to gain some little money in this fashion.

Each workshop receives as a gift, in aid of its foundation, a sum of from £25 to £50; this money coming from the charitable bequest of a Swedish philanthropist, Lars Hierta. The cost of maintenance is defrayed by voluntary gifts, by sales of work done in the workshops and by a sum of £800 per annum given by the city of Stockholm.

The work carried on comprises chip work, rafia work, fretwork, wirework, wood carving, seam stitching, hand weaving, cleaning and repairing of wearing apparel, joinery and boot making. There is also one workshop for light metal work. In order to counteract the allurements of the street, the work is made as pleasant as possible to the children, who, while amused by the work, at the same time develop the faculties of order, taste and observation, and the work thus has a moral effect of great value upon their minds.

The discipline in the workshops is not so rigorous as in the primary schools, which they all attend, and their instructors let slip no opportunity of brightening, as far as possible, lives which get so little mental and moral sunshine. The children feel themselves cared for and happy in their work, they obey their instructors rather through love than fear, and carry with them a pleasant remembrance of their work and its surroundings.

Fourteen years' experience has proved that these institutions are of great value in preventing many children from demoralisation; that any ordinary child between the age of 7 and 14 years can acquire a certain amount of manual dexterity, and that its faculty of observation becomes greatly refined and quickened.

The intelligence of the children is awakened, their characters moulded on right lines, and school work (mental education) becomes much easier to them. Moreover, the aptitude for work and the love of it inspired by their earlier efforts has saved many a child from a life of crime even when born of criminal parents.

Thirty-seven of these workshops have been formed in 22 towns of Sweden, and everywhere the results obtained have been equally as excellent as those from the workshops of Stockholm.

ZULEIKA BRADLEY.

Sunnyholm,
Burnley.

The Position and Registry of Teachers.

I AM instructed to send you the enclosed Resolutions of the Council of the Teachers' Guild. The Council will be greatly obliged if you will find space for them in your columns, as they deal with matters of great interest to the teaching profession at the present time.

H. P. GARROD,
General Secretary.

October 2nd.

RESOLUTIONS OF THE COUNCIL OF THE TEACHERS' GUILD.

These Resolutions were drawn up by the Council in the hope that the substance of them will be embodied in all future schemes for schools to be drawn by the Board of Education, but the Council also hope that ultimately existing schemes will be modified in accordance with them.

The schools to which the Resolutions apply are those schools, other than public elementary schools, whose heads are not self-appointed.

The Resolutions are intended to apply in all cases to women-teachers as well as to men-teachers.

Security of Tenure.

(*a*) All assistant-masters should be appointed in the first instance as probationers for one year. These appointments should be made by the headmaster and ratified by the governing body.

(*b*) If at the end of the year the headmaster should desire to retain the services of the probationer, the headmaster should recommend him to the governing body for a permanent appointment.

(*c*) A permanently appointed assistant master should only be dismissed, on the instance of the head master, by the governing body. The master threatened with dismissal should be allowed full opportunity of laying his case before the governing body.

(*d*) In cases of misconduct the headmaster should have the power of suspending an assistant-master thus appointed till the case comes before the governing body for decision.

(*e*) A right of appeal on the part of either the headmaster or the assistant should lie from the governing body to the Board of Education.

(*f*) All internal changes in the distribution of the staff should be made by the headmaster.

(*g*) No assistant-mastership should *ipso facto* terminate in consequence of a change of principals.

Note.—In the case of a group of schools under one local authority or governing body, the transference of a master from one school to another is recommended as an easy expedient for severing, without injustice, the relations between a head and his assistants, when it is thought desirable.

Salaries.

(*a*) The Board of Education should at once instruct its Consultative Committee to frame a register of efficient schools, public and private. In considering the claims of any school to be placed on this register, the Committee should have regard to the number, qualifications and salaries of the staff.

(*b*) In all future schemes for schools to be drawn by the Board of Education, provision should be made for retiring pensions, both for the headmaster and for the assistant-masters.

(*c*) Permanently appointed assistant-masters should receive their salaries directly from the governing body.

(*d*) In framing schemes for schools to be founded under local authorities, it is, in our opinion, essential for the efficiency of the schools that provision should be made for a salary fund on a more liberal scale than at present obtains in many secondary schools.

(*e*) Action might be taken by the Board of Education to discourage the employment of masters under age; thus, the fact that any school had on its staff masters under the age of twenty-one years should tell against its being reckoned as efficient.

Register of Teachers.

A general register of all qualified teachers should be formed. Alphabetical order should be preserved throughout.

With regard to the minimum qualifications that should be required to entitle the holder to a place on the register, great latitude should be exercised at first, so that all teachers who have been usefully and honourably employed for a certain number of years may be admitted.

Higher professional qualifications should be required after a limited number of years. Some such standard as that set up by the Secondary Education Commission should be aimed at, viz., the possession of (1) 'A degree or a certificate of general attainments granted by some university or body recognised for that purpose by the registration authority and accepted as satisfactory by that authority; and (2) A certificate or diploma of adequate knowledge of the theory and practice of education, granted by a University or body recognised as above (Report of Royal Commission, vol. 1, p. 321).

A fee should be charged for the original entry in the register, fixed, as to amount, so as to cover the expense of maintaining the register and all expenses incidental thereto (Report, vol. 1, p. 319).

The register should contain the following headings, set out in tabular form:—(1) Date of Registration; (2) Surname; (3) Christian name in full; (4) Date of birth; (5) Place or places where educated; (6) Degree or degrees, diplomas, certificates, with dates; (7) Distinctions at the Universities, with dates; (8) Certificates in technical subjects, drawing, instrumental music, vocal music, manual training, gymnastics, drill, &c.; (9) Certificates gained in respect of training, or in respect of knowledge of pedagogy, such as those conferred by the Board of Education, the Universities, the College of Preceptors, and other recognised bodies; (10) Educational experience, in schools or otherwise; (11) Other distinctions; (12) Present post.

OUR CHESS COLUMN.

No. 23.

The following schools have entered for The School World Second Inter-School Correspondence Tourney, and are now playing each other:—

Birmingham, King Edward's School.
Bishop's Stortford, Nonconformist Grammar School.
Harrogate, New College.
Saffron Walden, Friends' School.

Each school plays two games with each of its opponents, and thus there are twenty games in all. The tourney is conducted on the League system; a win counts one point, a loss 0, and a draw ½. The time limit is 72 hours per move. Bishop's Stortford and Harrogate took part in our first tourney. This, it will be remembered, resulted in a tie for the prize by Manchester Grammar School and Merchant Taylors', London. There is every reason for hoping that the present tourney will be as successful and as interesting as its predecessor. Perhaps the day is not far distant when not four but forty schools will be taking part. Chess in schools is undoubtedly on the increase, and it is a move in the right direction. The two winter terms are eminently suitable for the practice of the games, and I hope to hear of a few more clubs being started in schools. When once the necessary boards and men have been purchased, the expenses are very low indeed, and a small subscription is all that is necessary to provide prizes for tournaments, &c. I shall be very happy to furnish particulars as to the inauguration of a chess club to anyone who may not be quite certain of the most advisable *modus operandi.*

For the next twelve months or so there will be quite a stream of chess postcards flowing through the Post Office, inasmuch as a grand Correspondence Match, North *v.* South, is taking place, with fifty players a side.

Readers will remember that *The Australasian* has, from time to time, referred to The School World Chess Column in terms of approbation. There is a very well-managed column in that paper, and we think all connected with schools will read with interest the following extract from the issue for August 25th:—

"In the course of a recent interview, Sir Charles Todd, the Postmaster-General of South Australia, gave some reminiscences of the early days when he had to undertake long solitary rides in order to inspect telegraphic lines. 'I remember one experience,' he said, 'characteristic of the class of men I used to meet in the bush. I came one night to a shepherd's hut, and inquired of the solitary occupant if I might stay there. "Do as you like," was the uninviting rejoinder. "Then I will," I replied, and at once hobbled my horse. We had some damper and a billy of tea, and, noticing a home-made chess-board, I suggested a game. We became quite friendly, and the lonely shepherd told me his history. He was an Oxford M.A.'"

The game given for competition in our September column has resulted as follows:—

N. B. Dick, 6 marks (total 36); C. F. Russell, 8 (total 34); A. V. Poyser, 3 (total 33); E. H. Kettle, 3 (total 22). A pocket chessboard has been sent to

C. F. Russell,
Burscough Vicarage,
Ormskirk,
Lancashire.

For competition this month I have much pleasure in giving a problem kindly sent to me by Mr. F. W. Andrews, of The Coopers' Company's Grammar School, London. It has not been published before, so our solvers will have the first chance of appreciating its beauties. They must give all variations and send in before Nov. 25th.

White (7 pieces).—K on QR8, B on QB7, Q on K7, R on Q3, P's on QR5, QB4, KR2.
Black (5 pieces).—K on KB4, R on KR4, P's on KR2, KR6, KKt5.

White to play and mate in three moves.

The usual prizes will be awarded and, of course, the marks will be added to those already obtained in competition for the Staunton set offered to the boy who scores most points during the year.

Rules.

I.—Write on post cards only.
II.—Give name, date, and school address.
III.—Address all communications to

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The School World,
St. Martin's Street,
London, W.C.

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